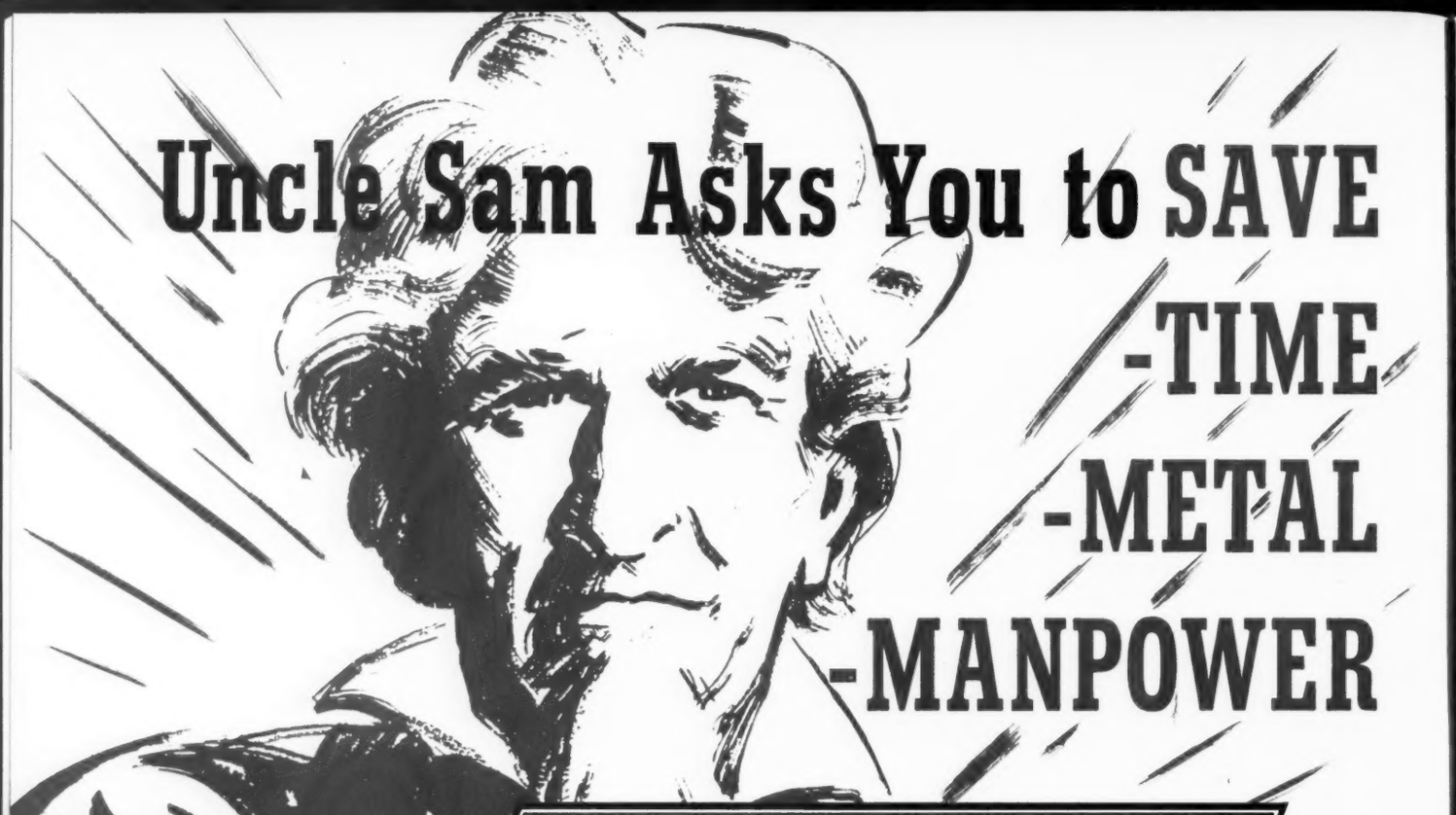
AMERICAN ARTISAN

OCTOBER
1941

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1880



Uncle Sam Asks You to SAVE -TIME -METAL -MANPOWER

LAMNECK IS PLEDGED TO AID YOU AID DEFENSE

Defense Housing now has "the right of way."

Lamneck Prefabricated Duct and Fittings are designed, produced, and supplied for your use in installing warm air heating and air conditioning systems according to Defense Housing Specifications.

The Lamneck creed provides for essential savings in man hours and metals through mass production and skilled engineering at our factory and on your job.

Lamneck saves for you through quick assemblies and easy installations, through reducing piece-meal shop work, scrap piles, and eliminating misfits.

Consult your Lamneck distributor today for details and procedure to be used in qualifying your job for priorities under the new "Defense Housing Order" of Office of Production Management.

BUY DEFENSE BONDS

LP INC

Specify LAMNECK

LAMNECK PRODUCTS INC. Middletown, Ohio

Simplified Furnace Pipe and Fittings and Prefabricated Duct and Fittings for all Types of Residential Gravity and Forced Warm Air Heating and Air Conditioning Systems.

HEAT-RITE . .

The WARM-AIR REGISTER THAT Leads them All

IN APPEARANCE • IN EFFICIENCY • IN VALUE

The Auer Heat-Rite is today's gravity register styled in the modern manner, with the streamlined eye appeal of the finest air conditioning registers. Created exclusively for Auer by an expert industrial designer, it has met immediate acceptance.

The Heat-Rite has a fin type grille, with the slightly downward directional flow so efficient for most warm air purposes, but adjustable for other levels as preferred. Here is a register which does credit to the finest of your new installations, and which is equally adaptable for remodeling or conversion of gravity to modern forced air systems, since dimensions are the same as older standard baseboard models, and thus suitable for existing fittings. Made in 1 and 2 piece types for baseboard, also in wall registers and baseboard intakes. See the Heat-Rite in our new DuraTone lustrous metallic finish, priced the same as standard finishes..

Latest Auer Register Book, showing all designs for both air conditioning and gravity, sent on request. Special Grille Catalog "G" also available.

THE AUER REGISTER COMPANY, CLEVELAND, OHIO

AUER REGISTERS

& GRILLES · For Air Conditioning *and* Gravity

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 110, No. 10 — October, 1941 — Founded 1880

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In This Issue

THE front section of this issue, in the editor's opinion, is one of the most important, and interesting, news reports published this year.

As such, it is our hope that readers will study these developments with minute care.

The things which have happened in the last thirty days are, by all standards, the most important happenings of 1941 to date. These developments touch and effect in a major degree every phase of the warm air heating-sheet metal contracting industry.

These developments are, in the large, favorable to our industry. The developments support, we think, our persistent belief that this industry cannot be relegated to the scrap pile because our industry is an essential effort in the nation's plan to arm.

Of first importance, of course, is the announcement of the placing in effect of the Defense Housing Rating Plan, discussed so frequently in this publication. We now have the advantages which this plan can bring. Under its program we will be able to sell and install heating systems in at least 300,000 housing units if we can sell central heating systems using a furnace against the boiler, circulating heater advocates. And, in view of the fact that many of our contractors sell and install floor furnaces, we have a double lever to secure business.

The pages devoted to presentations of the Chicago Plan to get materials; to the announcement of the new Contract Distribution Division in OPM; Order P-22 under which certain industries will get repair materials the A-9 Rating through which warehouses can sell materials to our contractors—are all worth serious study.

And if you don't think Washington likes warm air heating study page 58.

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More than 8,000 copies of this issue are being distributed

BE PREPARED . . . TO HANDLE DEFENSE JOBS!

Technical Information
Monel, Nickel and Nickel Alloys
Design and Construction of Heavy Equipment in Monel, Nickel, and Inconel
Welding, Brazing and Soft Soldering of Monel, Nickel and Inconel
Pickling Monel, Nickel and Inconel
Grinding, Polishing, Buffing Monel, Nickel and Inconel
Fabrication of Monel, Nickel and Inconel Seamless Pipe and Tubing

Monel bread and water breakers for life boats

Lots of sheet metal men have been handling Monel for years. A tip on joints or weldin' once in a while is all they need. But now, in the National Emergency sheet metal men that haven't done much with Monel are gettin' calls for it on defense contracts.

So here's a tip for them that belong in this group: Read up on how to handle Monel an' other INCO Nickel Alloys. INCO bulletins for sheet metal workers will give you a pile of useful dope. For instance:

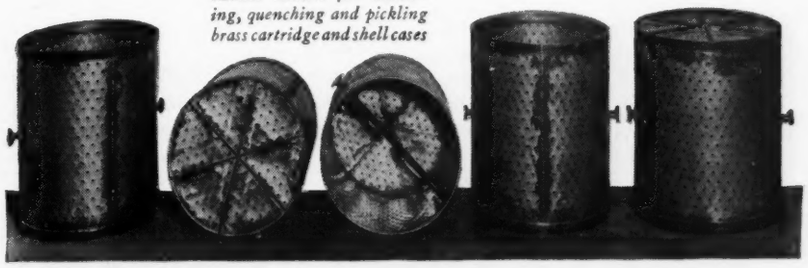
Bulletin T-2, "Welding, Brazing, and Soft Soldering of Monel, Nickel and Inconel," is a swell piece of readin' for any sheet metal man. One thing it has that can save you grief on weldin' is a whole page on weldin' wires, rods an' fluxes an' how to use 'em.

For anybody handlin' the big stuff like chemical equipment an' such, Bulletin T-14 is the answer to the S. M. M's. (sheet metal man's) prayer. The name is "The Design and Construction of Heavy Equipment in Monel, Nickel and Inconel," but all you have to ask for is Bulletin T-14.

Shops that do pipe jobs should keep on hand a few copies of T-17, "Fabrication of Monel, Nickel and Inconel Seamless Pipe and Tubing." Also about every shop can use dope on picklin', grindin' an' finishin'. You'll find it all in Bulletins TS-4 and TS-5.

I'm includin' a couple of pictures of the kind of jobs you run into on defense contracts. I can't give you much dope on them because (humph!) "space does not permit." But the tanks are for the life boats on a merchant ship taken over by the government, an' the perforated baskets are used for annealin', quenchin', and picklin' brass cartridge cases.

Monel baskets for annealing, quenching and pickling brass cartridge and shell cases



Send for the booklets before you forget . . . maybe you'll land a defense contract tomorrow an' need just this kind of information.

Tim Sheers

INCO BULLETINS
for Sheet Metal Workers

T-2—"Welding, Brazing and Soft Soldering of Monel, Nickel and Inconel."

T-14—"The Design and Construction of Heavy Equipment in Monel, Nickel and Inconel."

T-17—"Fabrication of Monel, Nickel and Inconel Seamless Pipe and Tubing."

TS-4—"Pickling Monel, Nickel and Inconel."

TS-5—"Grinding, Polishing, Buffing Monel, Nickel and Inconel."

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

FUEL SAVING IS MORE IMPORTANT THAN EVER BEFORE

THE 411 COMPENSATED THERMOSTAT SAVES FUEL

Every kind of fuel for heating—oil, gas or coal—may cost more this winter and may be harder to get. National defense needs make this inevitable.

The 411 Compensated Thermostat stops fuel waste by holding temperatures to closest possible limits. This results not only in important savings but conservation of fuel as well.

The 411 is a superior comfort guarantee, also. It controls automatic heating systems to eliminate uncomfortable "Cold 70", as well as objectionable overheating.

The compensating preheater element provides sensitivity, most important in automatic heating. This element in the 411 need not be replaced to meet variations in local heating requirements. A simple screw driver adjustment (patented) takes care of any situation.

The 411 is available also in day and night type—the turn down is accomplished by a second preheater which greatly simplifies construction—holds cost to a minimum.

Detroit Lubricator Company make a complete line of heating controls. You can match the 411 with controls throughout the system which work in perfect harmony. The use of all-Detroit controls avoids divided responsibility.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

H&C

No.130

ON GRAVITY JOBS

You Provide for Air Conditioning, too When you use this finest of Gravity Registers!

—and that's a fact that will help you to convert many prospects into customers.

Every buyer of a gravity system likes to contemplate the possibility of having an air conditioned job some time later on; and the fact that you propose H&C registers with flexible fins that will function equally well on air conditioning and eliminate a great deal of expense when the change-over occurs, is very apt to be the factor that clinches the sale for you. Try it on your next prospect. It works like a charm.

HART & COOLEY MANUFACTURING CO.

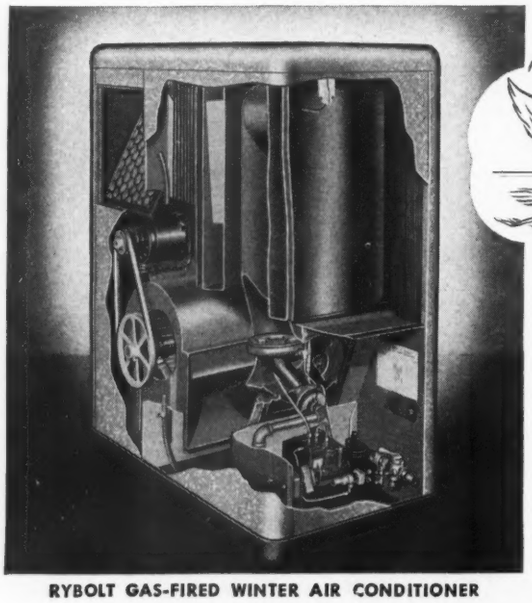
Warm Air Registers • Air Conditioning Grilles • Damper Regulator Sets • Dampers • Chain • Pulleys

HOLLAND H&C MICHIGAN

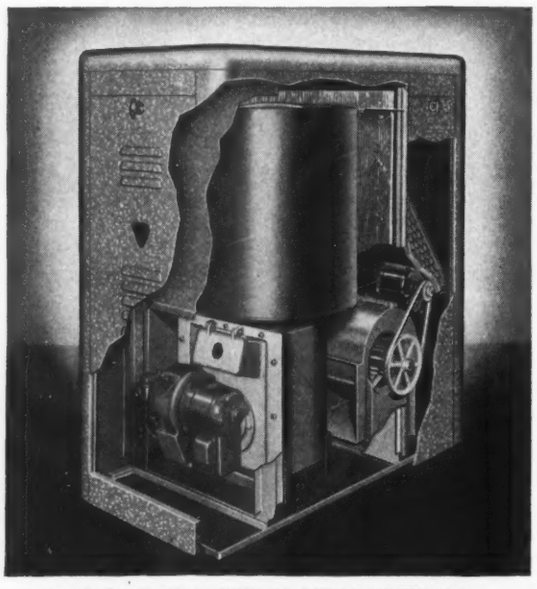
Chicago Office: 61 W. Kinzie St. Philadelphia Office: 1600 Arch St.

Western Representatives: John T. Rowntree Co. Los Angeles San Francisco Portland Seattle Salt Lake City Denver

RYBOLT



RYBOLT GAS-FIRED WINTER AIR CONDITIONER



RYBOLT OIL-FIRED WINTER AIR CONDITIONER

NOTICE TO JOBBERS

Under present conditions our production capacity is taxed to the limit to meet the requirements of our regular customers to whom we feel we owe first consideration. In justice to them, therefore, and also because we desire to cooperate to the fullest extent with the National Defense Program, we do not feel free at this time to consider any new distribution outlets, much as we appreciate the requests which we have been receiving.

TWO NEW RYBOLT UNITS TO MEET MODERN *Automatic Heating* REQUIREMENTS!

● Realizing the need for winter air conditioners that will meet the requirements of the small or medium-sized house, RYBOLT has designed two new units that are unusually compact yet complete with the most advanced features of modern automatic heating. Both units—*gas-fired and oil-fired*—provide all the advantages of heating efficiency, convenience, safety and economy possible today with the use of these two fuels.

The new space-saving RYBOLT GAS-FIRED UNIT

The new RYBOLT Series RS Gas-Fired Winter Air Conditioner embodies many improved features to insure comfortable, even heat with utmost convenience and economy. Double protection gas valve control guarantees safe operation under all conditions. Complete with quiet running blower, automatic humidifier, room thermostat and Dust-Stop filters. Handsome hammerloid finish cabinet. Shipped completely assembled, which materially reduces handling time for jobbers and dealers. Also means big saving of installer's time because he will not have to assemble unit on the job.

A new compact RYBOLT OIL-FIRED UNIT

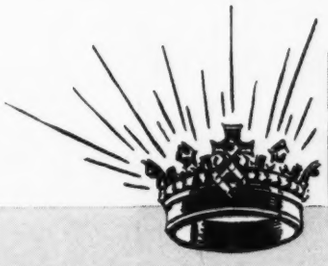
With no sacrifice of efficiency or high quality performance, this unit is sized to fit into minimum space. Completely automatic, quiet in operation, fully dependable. Pull-out feature of the oil burner makes it extremely easy to service. Burner, controls and blower are completely concealed yet easily accessible. Complete with quiet running blower, Dust-Stop filter, automatic humidifier, room thermostat. Handsome cabinet finished in hammerloid enamel.

TRADE MARK

THE RYBOLT HEATER COMPANY

615 MILLER STREET • ASHLAND, OHIO

Host to royalty*, Brown Palace Hotel *gets copper over coping and parapet*



10,000 lbs. of 16-oz. cold-rolled Anaconda Copper used over original masonry on famous 50-year-old hostelry

This Denver, Colorado, landmark was an architectural triumph in 1891, and is amazingly up-to-date today. Recently the sandstone coping and parapet work was sandblasted and covered with Anaconda Sheet Copper.

For large buildings like this one and residences as well, copper offers unsurpassed sheet metal opportunities. It is rustless and durable . . . defies time and weather . . . is relatively light in weight. Best of all, it is easily workable and most economical in service. 4170

*Besides many Presidents of the United States, this famous hotel has entertained such guests as Queen Marie of Rumania, the Crown Prince and Princess of Denmark, Marshals Foch and Joffre, Sarah Bernhardt, Otis Skinner, Florenz Ziegfeld and hundreds of others.

The new copper work was installed by Elmer Johnson of Denver. The architect was Earl C. Morris of Denver.

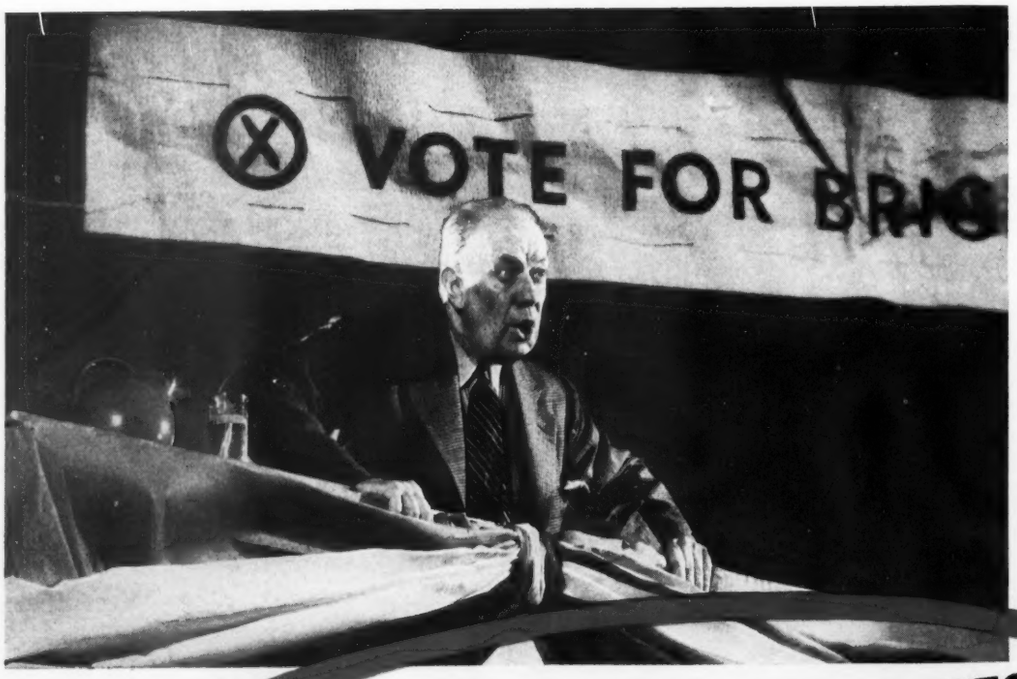
DEFENSE COMES FIRST

Copper and copper alloys are playing an indispensible part in the National Defense Program. Recognizing the responsibility placed on us, we are exerting every effort to fulfill our part in the tremendous task created by the emergency. In the United States and Canada, our ten plants serving important industrial centers are working to the limit of their ability to increase the output of products for which the demand is greatest. Should you have difficulty in obtaining copper for sheet metal work, you will know the reason. Copper, today, is a *priceless* metal!

ANACONDA
from mine to consumer

Anaconda Copper

THE AMERICAN BRASS COMPANY, General Offices: Waterbury, Conn.
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.



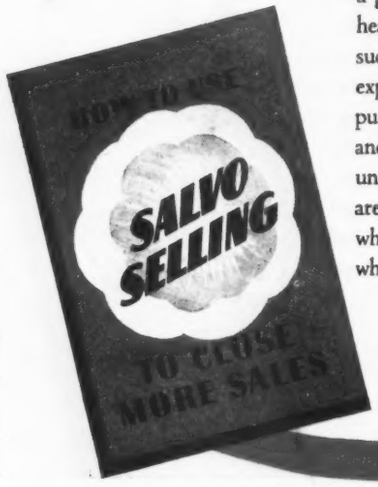
IT'S HARD TO MAKE SPEECHES FOR A *Split Ticket*

Ingenious explanations are demanded from the campaign orator who asks you to "split your ticket." Even the best of explanations can't completely eliminate confusion and indecision from the voter's mind.

The same confusion and indecision, on the part of prospective buyers, has spoiled a good many potential sales of automatic heating equipment. Wise salesmen avoid such difficulty, and the necessity for extra explanations, simply by concentrating to put over *one name*. Firing unit, controls and other accessories go in one package under a single label. Doubt and confusion are out; the buyer is confident of getting what he wants because he knows just who is responsible for the whole job. He doesn't have to fear possible "buck passing."

This perfectly simple technique has helped many a salesman to improve his record. We call it "Salvo Selling" because it is a process of concentrating full sales impact on the prospect — like a whole battery of big guns fired at once against the same objective. If *you* want to learn how to make more sales faster, just write us for your free copy of the booklet, "Salvo Selling," which reveals the principles of this successful sales approach.

SEND FOR THIS FREE BOOK



There's a New Leader in the Control Field

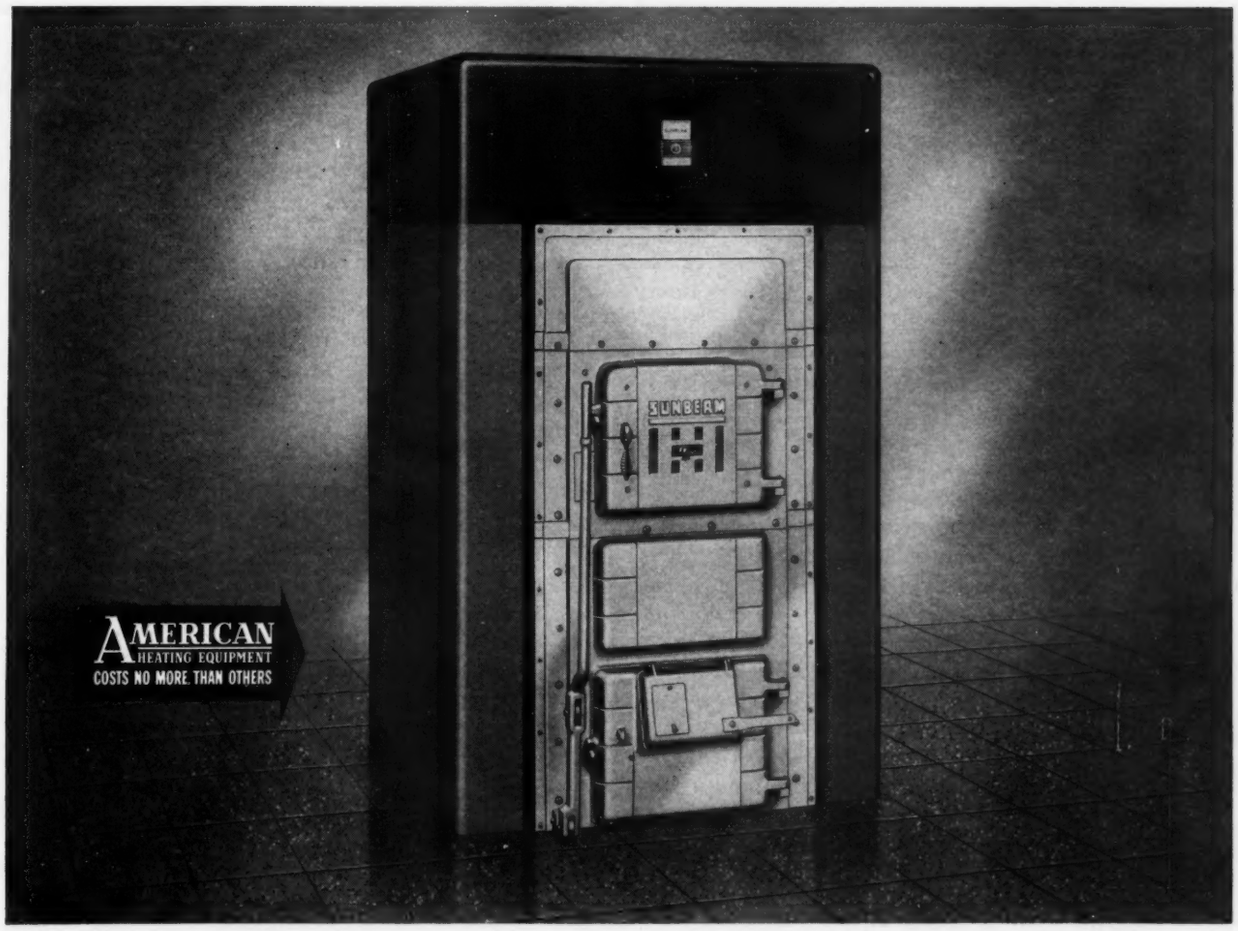
PERFEX CORPORATION

500 West Oklahoma Avenue, Milwaukee, Wisconsin

THE NEW

SUNBEAM

ARLINGTON "SQUARE"



It's New—It's Modern—It's Efficient

HERE'S THE ANSWER to all who seek a fine, modestly priced, steel Warm-Air Furnace that rivals the beauty of Winter Air Conditioners — the new SUNBEAM Arlington "Square".

The Arlington "Square" includes all the improvements of the regular SUNBEAM Arlington Furnace—a larger, more massive Radiator, Duplex Grates, full height Firebox and Higher Ratings.

The handsome jacket is finished in dark Placid Blue and Black with a soft suede texture. It will blend with the smartest surroundings, and actually add a note of beauty in the most modern basement.

Made in four sizes with units from 20 inch to 27 inch shell diameters, all sizes of the Arlington are available in models for Oil or Coal—Stoker or Hand Fired. Oil Fired Units are offered in gun or rotary type models.

Write today for attractive new literature on the Arlington "Square" and for the name of the SUNBEAM jobber nearest you.

AMERICAN RADIATOR & Standard Sanitary
New York CORPORATION Pittsburgh

Copyright 1941, American Radiator & Standard Sanitary Corporation

★ ★ DEFEND OUR COUNTRY. ENLIST NOW IN THE U. S. REGULAR ARMY ★ ★

These things we are <u>not</u> short of

EVERYBODY is talking about shortages nowadays; and most everybody is feeling their effects. We at Moncrief have begun to be pinched for materials here and there. Production has been restricted at many points and in consequence we have not been able to do all we would like to do and have been accustomed to do for our customers, and for prospects whom we hope to make customers.

YES, the materials situation is uncertain. But of some things there is no uncertainty and no change.

OUR PRODUCTS are made of materials, iron, steel and so on; but in a larger sense, our business has been built of intangibles—a sincere desire to adhere to high standards, to back up our products with a full measure of service, and to treat all with fairness and impartiality.

WE DON'T KNOW how much our activity is going to be curbed by restrictions of materials; but we do want our customers and friends to know that, in any event, there is no shortage in our office and plant of the desire to do everything we can to serve our dealers and jobbers and give them everything we have so that they can in turn serve their trade.

TO DO THIS, we may have to tell prospects whose business we have been asking for all these years that we are unable to accept their orders at this time. But, in all fairness, we think they will agree that our first obligation is to care for the needs of those dealers who throughout the years looked to Moncrief as a principal source of supply.

SOMEBODY has said, "Don't worry. It won't last. Nothing ever does." But no matter how long, be assured that we shall continue to do the best we can and to give a square deal to all.

IT DOES NOT make us happy to have more orders than we can fill. We shall be glad when the time comes when both you and we shall be asking for business. That is the normal state of affairs. Let us hope it is nearer ahead than we can foresee.

The HENRY FURNACE & FOUNDRY Co.
3473 E. 49th St., Cleveland, Ohio

MONCRIEF

FURNACES and WINTER AIR CONDITIONERS

Season's Greatest Buy!

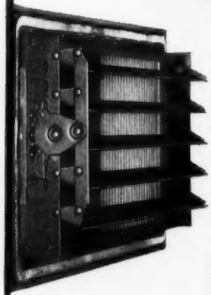
Sensation of the Season! The Whole Nation Knows Their Value

Acclaimed the Outstanding Registers of the year by the Entire Heating Trade are these Leader-Selling U. S. Numbers for Gravity and Air-Conditioning.

U. S. No. 40 Series Gravity Baseboard Registers have Sturdy Build and Functions not equalled by any other baseboard register—More FREE Area, NON-VISION, 2-piece Construction for LEAK-PROOF Installations, and Engaging Lugs for EASY FACE REMOVAL. Featured in METALAC FINISH at Black Japan Prices.

U. S. No. 40 Series
Gravity Baseboard Register

U. S. No. 256
Air-Conditioning Register



REAR VIEW of the No. 256 shows the mechanism that gives any angle of air-flow or volume required.

4-WAY FLOW FOR AIR-CONDITIONING

U. S. No. 256 Air-Conditioning Register is the Most Efficient and Mechanically Perfect Multiple-Valve Register made. It is truly the Acme of Perfection in register production.

Gives every angle up-flow to 45° down-flow without shutting off the register.

Grille Bar setting for Side Flows can be changed as required without damage to grille or finish with the Easy Setting Wrench.

The No. 256 can be used in any style stackhead with full grille air-flow, full face coverage, and minimum resistance. There is no center mullion to obstruct flow.

Send for the New Catalogs shown above. Ask for 41G for Gravity—41AC for Air-Conditioning—Registers and Accessories.

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY • SAN FRANCISCO • NEW YORK, N. Y.

CANADIAN MANUFACTURING DISTRIBUTORS—Canada Register & Grille Co., Ltd., Toronto, Ontario

These things we are not short of

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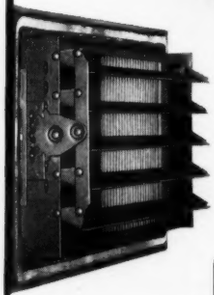

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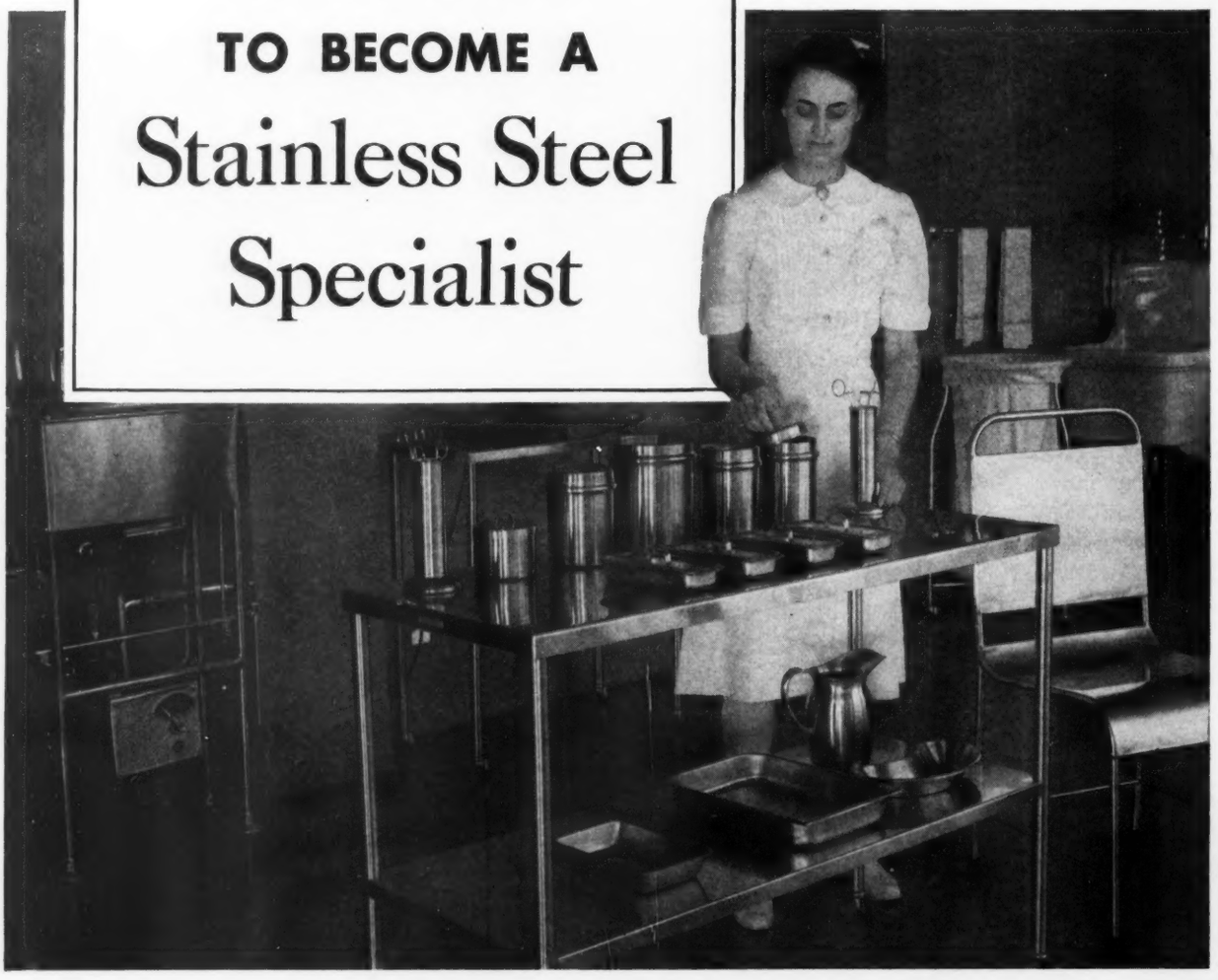
MINNEAPOLIS • KANSAS CITY • ALBANY • SAN FRANCISCO • NEW YORK, N. Y.

CANADIAN MANUFACTURING DISTRIBUTORS—Canada Register & Grille Co., Ltd., Toronto, Ontario

PLAN NOW TO BECOME A Stainless Steel Specialist



PRODUCTION of U·S·S Stainless Steel is being greatly increased to take care of the demands of National defense. This means that when peace comes, U·S·S Stainless will be more plentiful than ever.

But why wait 'till then to make your plans? The illustration above shows more than a dozen different products fabricated from U·S·S Stainless — tables, chairs, sterilizer, trays, pitchers and many others.

Some sheet metal workers specialize on sinks and kitchen equipment for homes, restaurants, hotels and hospitals. Others are specializing on stainless steel tanks, evaporators, cookers, vats and related equipment for food plants, dairies and breweries.

Most of these products can be fabricated by sheet metal workers without much change in shop equipment, and they are profitable items. **WRITE FOR THIS BOOK.** To help you learn to handle U·S·S Stainless Steel, we have prepared a 91-page instruction book entitled, "The Fabrication of U·S·S Stainless Steel." It answers your questions on fabrication problems, what type of U·S·S Stainless to use, how to finish stainless, etc. A copy is yours for the asking. Write to any of the companies below.

U·S·S STAINLESS STEEL

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*

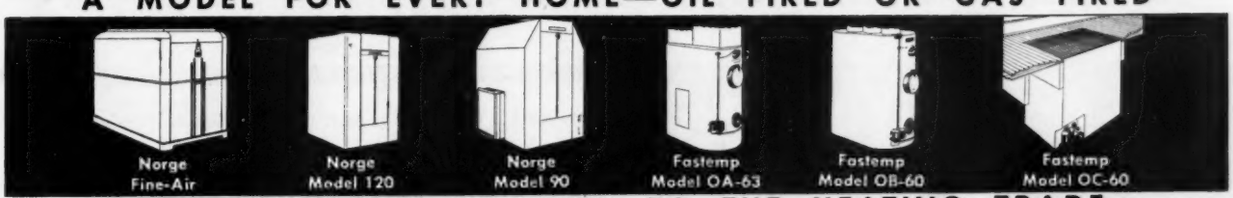
Scully Steel Products Company, Chicago, *Warehouse Distributors*

United States Steel Export Company, New York

UNITED STATES STEEL

LOOK —ANOTHER NEW NORGE "PACKAGE" —DESIGNED ESPECIALLY FOR DEFENSE HOMES
AND WHAT'S MORE, IN SPITE OF HEAVY SHIPMENTS, EVERY NORGE MODEL IS AVAILABLE FOR IMMEDIATE DELIVERY
New MODEL OD-70 COMPLETELY AUTOMATIC; PRESSURE VAPORIZING; ONLY 26" SQUARE; PRICED FOR DEFENSE HOMES . . .
Model OD-70 is only 26" square and 67" high; is quickly and easily installed in basement or utility room. Bottom or side inlet, top discharge. Develops 70,000 B.T.U. at the bonnet and delivers 800 c.f.m. All controls fully automatic. Two-stage mechanical draft oil-burner listed as standard by Underwriter Laboratories and fully approved for CS-75. Completely factory wired. Beautiful pearl gray baked enamel finish. Streamlined cabinet. 15 models ranging from 60,000 B.T.U. to 165,000 B.T.U. bonnet output, backed by two of the greatest names in American industry—Norge—Borg-Warner. Immediate delivery. Write or wire.
NORGE HEATING & CONDITIONING DIVISION
BORG-WARNER CORPORATION
12345 KERCHEVAL AVE. • DETROIT
See NORGE before you buy!

A MODEL FOR EVERY HOME—OIL FIRED OR GAS FIRED



FOR IMMEDIATE DELIVERY TO THE HEATING TRADE

"SAVE FOR DEFENSE"

Sell

PENN-BUILT

Day-Nite Control

Automatic night lowering of temperature with Penn Day-Nite Control is one important way to save fuel. And remember, this Penn Control has distinct advantages over any other system.

The separate electric clock may be mounted any place in the house where a dependable time piece is needed. It's as easy to set as an alarm clock—and day and night settings can be changed at will.

The Penn Day-Nite Thermostat and Tem-Clock can be applied to any heating installation. Where a Penn-built heat anticipating thermostat is now on the job, it need not be replaced. Just the addition of a tiny electric heater—quickly and easily installed in the thermostat—adapts it to Day-Nite control. An exclusive patented system helps to avoid fuel-wasting overrun when daytime temperature is restored.

The Penn-built Day-Nite system is easy to install, simpler to stock and to handle. Distributors, Dealers, Service Men will profit by using it to tie in with the "Save Fuel for Defense" campaign. Check your stocks now—order what you need—heaters, thermostats, clocks.

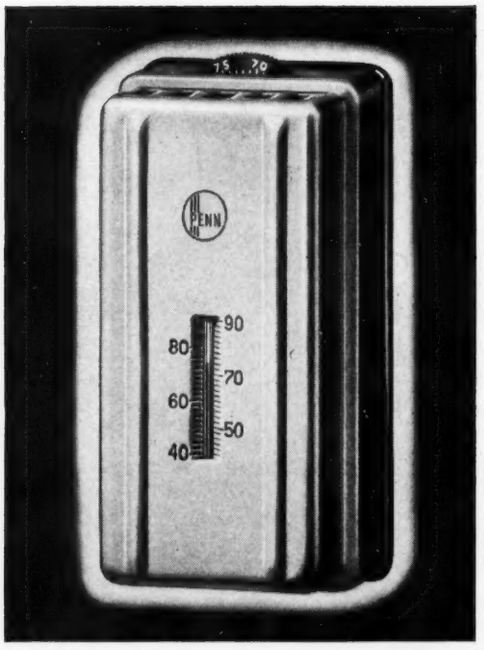
Penn Electric Switch Co., Goshen, Indiana. In Canada: Powerlite Devices, Ltd., Penn Electric Switch Division, Toronto, Ont. Export: 100 Varick St., New York City. Branches, representatives and distributors in all principal cities.

Show Your Prospect These Savings

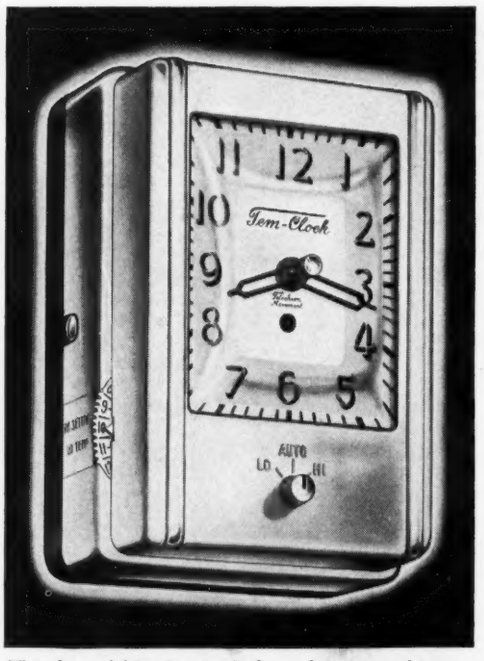
Night Setback is	IF AVERAGE ANNUAL FUEL COST IS $100 YOU Save Each Year APPROXIMATELY....		
	8 hours Night Temperature	12 hours Night Temperature	16 hours Night Temperature
6° below Day Temp.	$5.00	$7.50	$9.50
9° below Day Temp.	$9.50	$14.50	$19.50
15° below Day Temp.	$14.50	$21.50	$28.50

EACH COIN REPRESENTS A SAVING OF $1.00

Savings based upon findings of impartial organizations. Calculations above apply where inside day temperature is 70° and average outside temperature is 35°. Greater savings are possible where the average outside temperature is below 35° or where inside daytime temperature is maintained above 70°.



This heat anticipating thermostat is widely known for its accurate temperature control on all types of heating systems—steam, hot water, or warm air. The thermostat maintains temperature within a fraction-of-a-degree of the selected level.



This dependable electric clock can be mounted in any room at any height. It makes the thermostat-controlled system a Day-Nite System. Settings are easily made and either the day or night setting can be changed at will—no service call necessary.

PENN

Penn-Built Controls for Many Applications

Thermostats, Bonnet Controls, Ductstats, Fire Protection Controls, Water Temperature Controls, Boiler Pressure Controls, Boiler Water Level Controls, Humidistats, Stack Switches, Stoker Timer Relays, Solenoid Gas Valves, General Purpose Relays, Solenoid Refrigerant and Water Valves, Refrigeration Pressure and Temperature Controls, Water Valves, Pump Controls, Air Compressor Controls, Air Volume Controls, Line Starters.

SMALL SHOPS CAN "MAKE MONEY" ON THE *LOCKFORMER*, TOO!

Most of the really big shops in the country are already Lockformer equipped—many with two and even three machines. But there are still plenty of small shops which are passing up Lockformer extra profits . . . and for no real reason!

PRICES START AT $163.00

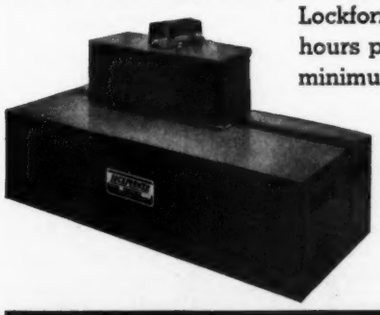
Your shop can have a Lockformer 24, complete and ready to plug in, for as little as $163.00. Although small enough to be truly portable, the 24 is a real heavy duty piece of equipment—will make perfect Pittsburgh Locks on metal ranging from 28 to 24 gauge.

MAKES PITTSBURGH LOCKS SIXTEEN TIMES AS FAST!

Like all Lockformers, the "24" slashes fabrication time almost unbelievably. As a matter of actual fact, one man and a Lockformer can make more Pittsburgh Locks than sixteen men working at eight brakes!

PRACTICAL FOR EVEN THE SMALLEST SHOPS

Shops catering to general work and which handle only 4 or 5 warm air jobs a year will not, naturally, use their Lockformer more than a few hours per month. Yet even this minimum construction will return almost 100% on the 24's investment during the first year alone!



TRY IT YOURSELF!

It's easier for the Lockformer salesman in your territory to "show" you how a Lockformer operates than it is for him to "tell" you. Demonstration requires only five minutes and an ordinary electric light outlet. Send the coupon, and we'll do the rest. No obligation, naturally.

Lockformer Company
4615 Arthington St., Chicago, Ill.

Gentlemen: ( ) I'd like a demonstration—
( ) send me more information.

Name .....

Address .....

City ..... State .....

THE LOCKFORMER CO.

4615 ARTHINGTON STREET, CHICAGO, ILLINOIS

Figurin' the Angles

What smart men do in these times to make money with Fiberglas* Dust-Stop* Air Filters

SHEET METAL IS SURE COMIN' THROUGH FOR THESE DEFENSE JOBS. BUT WHAT ABOUT STUFF FOR PRIVATE HOMES?
SO FAR, O. K! BUT I WISH I KNEW HOW TO GET MORE REPLACEMENT BUSINESS.
Westcott

Dust-Stop's Free Salesplan Shows You How

Times are uncertain.

Shortages of one sort or another may come in your business. The smart man begins now to build up his furnace cleaning, repairing, and filter replacement business. He makes money for himself. And in areas where a fuel shortage threatens, he helps his customers make the saving on fuel as suggested by the Government.

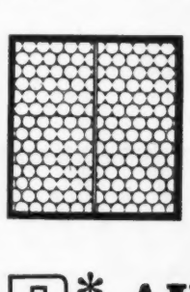
And here's how Dust-Stop's free salesplan helps you dig up prospects.

You get free mailing pieces . . . postcards, newspaper mats . . . reminder labels . . . radio scripts. And all are imprinted *free* with your name and address.

Besides giving you the biggest set of free dealer helps in the filter field, Dust-Stops advertise in American Home, Better Homes and Gardens, Life, and Saturday Evening Post—telling householders that they've got filters, they've got to change 'em, and to get *Dust-Stops* from you!

What's more—Dust-Stops pay you a worthwhile profit on every sale . . . about $1.50 to $2.00 per furnace, every year. Figure out the extra profits on 200 or 300 furnaces . . . not only this year, but for the life of the furnace.

And here's another plus! You can get your foot in the door with Dust-Stops . . . open up profitable furnace cleaning jobs, or a money-making job of adjusting the automatic firing unit or oil burner. What's more, you'll make friends while providing better furnace operation.



You can bet your whiskers smart men are going to build up their filter replacement business. Why don't you? Write for Dust-Stop's free sales plan now. Tell your manufacturer or jobber to send it to you, pronto!

• • •

Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

FIBERGLAS* DUSTOP* AIR FILTERS

T.M. Reg. U.S. Pat. Off.

"CHRYSLER AIRTEMP DEALERS MAKE MONEY"

Above is the building occupied by Sidles Company, Omaha, Neb., Chrysler Airtemp dealer —an old established firm with a high reputation for progressive business policies and a fine service organization. From this showroom, Sidles Co. sells the complete Airtemp line.

Sidles Company, Omaha, Does Balanced, Year-'Round Volume

Six Years As Airtemp Dealer Show $375,000 Annual Average Heating And Cooling Sales

Sidles Company, with headquarters in Omaha, Neb., has been an Airtemp dealer continuously since 1935 —handling the complete Airtemp line of heating and air-conditioning equipment. Victor L. Toft, Operating Manager, reported recently—at the end of six successful years of selling Airtemp products—that his Company had reached a total volume of $2,250,000 of Airtemp sales. That is an annual average of $375,000—but recent years have, of course, reached higher sales levels. In the past year Sidles Company's air-conditioning business was about evenly divided in dollar volume between Airtemp *heating* and *cooling* equipment—a balanced, year-'round business!

Does Sidles Company make money on its Airtemp sales? Well, figure what you could make on such a volume! Mr. Toft writes: "The fact that we have continued to handle the Airtemp line exclusively, without interruption since the beginning, is evidence not only of our satisfaction with the merchandise, but also of the Airtemp consumer acceptance here."

V. L. Toft, Sidles Operating Manager, Says—

On September 20, 1941, V. L. Toft, Operating Manager, Sidles Company, wrote D. W. Russell, President, Airtemp Division, Chrysler Corporation: "We are proud of the fact that Sidles Company is among those who pioneered the Airtemp line. In the past six years we have been favored with $2,250,000 in sales volume on Airtemp products. The fact that the name "Chrysler" denotes excellence of product to such a great proportion of our buying public, has been more instrumental than any other one thing in making this record possible. Consequently, it goes without saying that we place a very considerable value on the Chrysler Airtemp franchise.

"We have been pleased to note the growth of factory assistance—both from the standpoint of sales helps and field work in both sales and service. Chrysler Airtemp is growing rapidly because of this policy. We look forward with much pleasure to the prospect of growing with you."

Victor L. Toft, Operating Manager, Sidles Company, Omaha, pioneered the Chrysler Airtemp line in the Omaha-Council Bluffs territory—is doing a balanced job of year-'round selling.

TURN THE PAGE FOR MORE FACTS

MAIL THIS CARD FOR THE AIRTEMP PROPOSITION!

AIRTEMP DIVISION, DEPT. AA-10
Chrysler Corporation, Dayton, Ohio

GENTLEMEN:

Please send me the Chrysler Airtemp Proposition for dealers.

Name _____

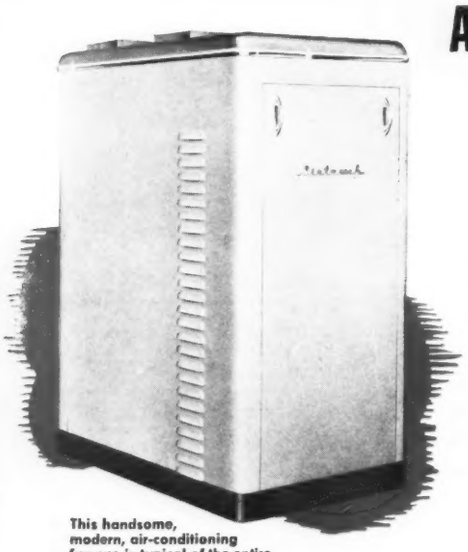
Address _____

City _____ *State* _____

CHRYSLER AIRTEMP
AIRTEMP DIVISION • CHRYSLER CORPORATION • DAYTON, OHIO

YEAR-'ROUND PROFITS ARE SURE

with Good Management plus a Complete Line of both Heating and Cooling



This handsome, modern, air-conditioning furnace is typical of the entire Airtemp heating line.

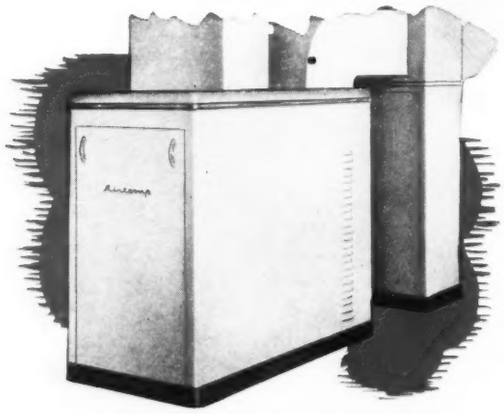
Airtemp Dealers Do A Good Business Twelve Months A Year

Heating dealers used to make money six months a year and try not to lose it the other six months! But now smart heating dealers do a year-'round business and make a year-'round profit—by selling the complete Chrysler Airtemp line of heating and air-conditioning equipment. The cooling market is enormous—growing yearly! Airtemp dealers like Sidles Company—see story on preceding page—are already doing a dollar volume in summer cooling equal to their heating and winter air-conditioning sales. Why not investigate Airtemp's dealer proposition? Mail the card, get the facts!

This popular 3 h. p. "packaged" cooling unit has the exclusive, hermetically-sealed radial compressor.

HEATING

The Airtemp line of heating equipment includes oil, gas and coal, gravity and air-conditioning furnaces; hot water and steam systems for oil or gas; oil burners and water heaters. The card below will bring you complete product literature which describes and illustrates the many exclusive features of the Airtemp heating line—product of Chrysler Corporation's great laboratories, world-famous engineering staff and a modern plant finely equipped for precision mass production. Why not buy every type of heating equipment you require, from one, responsible, nationally-known manufacturer?



HEATING AND COOLING

Airtemp alone offers dealers a practical combination heating and cooling unit for homes of modest cost! Here is an engineering development designed, built and warranted by Chrysler that provides Airtemp dealers with an exclusive sales leader. Cooling unit can be added to Airtemp air-conditioning furnaces at any time.

COOLING

The Airtemp line of summer air-conditioning equipment includes 3 and 5 h. p. "packaged" cooling units which, singly or in multiple, take care of 85% of the requirements for summer cooling equipment in offices, restaurants, and shops. Airtemp also builds central cooling installations for larger stores, theaters, hotels and plants—from 10 to 75 h. p., and a complete line of commercial refrigeration equipment which alone doubles the Airtemp dealer's market. The radial compressor designed by Airtemp is an exclusive feature of all Airtemp cooling and commercial refrigeration equipment.

Get the Facts—Send this Card!

Postage Will Be Paid by Addressee

BUSINESS REPLY CARD
First Class Permit No. 885, Sec. 510, P. L. & R., Dayton, Ohio

No Postage Stamp Necessary If Mailed in the United States

AIRTEMP DIVISION, Dept. AA-10

Chrysler Corporation

DAYTON, OHIO

How Chrysler Airtemp Helps Good Management Make Money

Chrysler Airtemp knows that its dealers *must* make money—does everything possible to help; offers a complete and liberal local advertising and merchandising program, constant factory contact on both sales and service. Tear out the card at the left! Mail it and get, without obligation, the complete story of Chrysler Airtemp's complete proposition.

CHRYSLER AIRTEMP

AIRTEMP DIVISION OF CHRYSLER CORPORATION • DAYTON, OHIO

The quality of a movie actor's performance or an opera singer's voice is based, to a large extent, upon personal opinions and tastes. Yet, even here where there is room for a wide difference of opinion, the public is quick to reward good work and to pass-by that which is mediocre.

Quality in a sheet metal job, you may say, is made of different stuff. It is, we agree, but chiefly because it applies to workmanship and materials which are tangible and therefore readily compared with others. Aside from that, you are selling the same people as the man at the ticket window. And, as in his case, your customers appreciate good work and will help build up your business as long as you give them quality they like at a fair price.

For a long time the OSBORN name has been synonomous with high quality in materials, tools and machinery used in the sheet metal industry. That, we believe, is why a large percentage of the old and successful shops in our territory rely upon OSBORN for their requirements. Needless to say, the confidence which these shop owners have in OSBORN, and we in them, has been an asset to us both.

THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO
BUFFALO • CINCINNATI • DETROIT
Manufacturers—Distributors of Metals and Metal Products

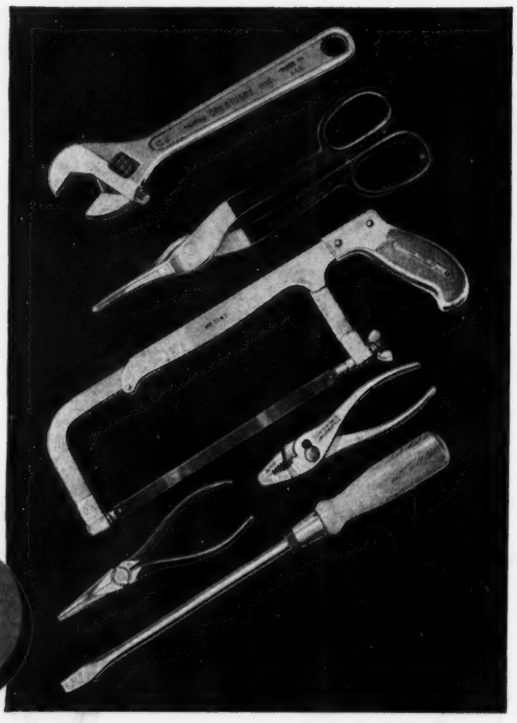
A DEPENDABLE SOURCE OF SUPPLY FOR 82 YEARS

Where trustworthy tools are vital

To speed our rapidly growing two-ocean Navy, and to build another "bridge of ships" to the democracies of the world, Crescent Tools are doing their bit for Defense. Of all the jobs that American industry has accepted in the rush to re-arm America, shipbuilding is probably the biggest and toughest. In these shipyards, Crescent Tools have long been relied on to help keep launchings ahead of schedule. Wherever you look you can see Crescent and Crestoloy Tools hard at it.

Crescent Tools include adjustable wrenches, pliers of all types, hacksaws, snips, screwdrivers, etc., etc. They are sold under the "Crescent" and "Crestoloy" trade names by hardware dealers and industrial distributors everywhere.

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.



YOU CAN ALWAYS DEPEND ON

CRESCENT TOOLS

A REPUBLIC TAYLOR TERNE ROOF IN ITS THIRD GENERATION OF SERVICE!

This Taylor Terne Roof on an eastern library building was already a year old when General Custer was still fighting Indians in Montana. It has been in service ever since.

Sixty-six years of rugged service takes a roof of unusual durability—a quality which Taylor Ternes have demonstrated since 1810. It results from a base metal of rust-resisting copper-bearing steel, coated with a lead-tin alloy by a process insuring perfect amalgamation of all three metals.

Republic Taylor Terne Roofing is weather-resisting, waterproof, fire-retarding. Properly grounded, it's protection against lightning. It is lightweight, easily applied to any surface, suitable for any structure. It costs less to buy, to lay, to keep looking like new. It makes satisfied customers.

Build your roofing business on a sound, reliable foundation. Build it on Republic Taylor Ternes.

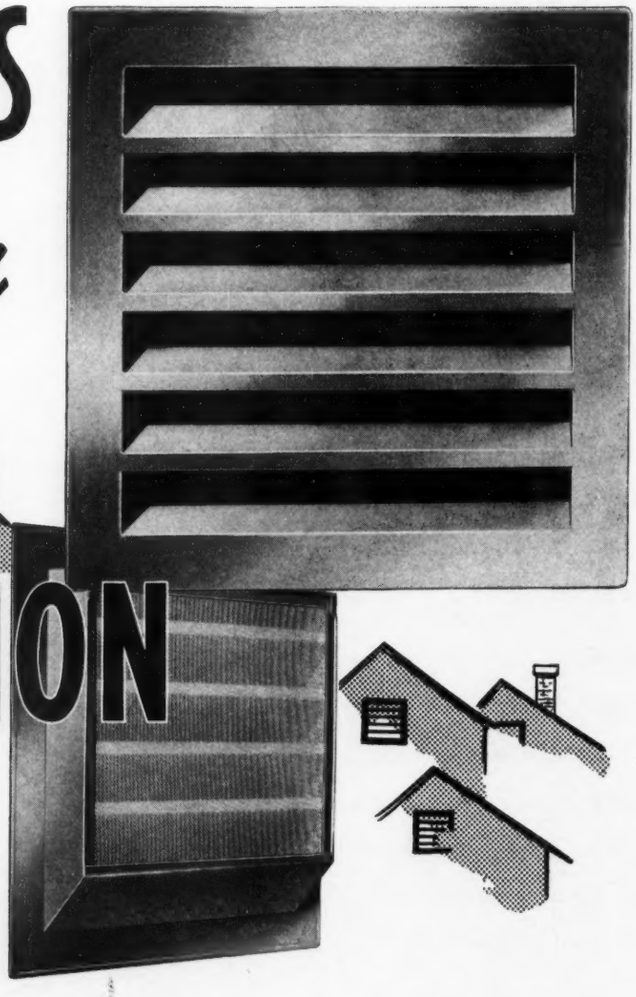
For full details about Republic Taylor Terne Roofing in sheets and rolls—sizes, gauges, weights of coatings and other data—write for Booklet 403.

REPUBLIC STEEL CORPORATION
General Offices: Cleveland, Ohio
Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company

Ridgeway Library, Philadelphia

REPUBLIC *Taylor* ROOFING TERNES

ATTIC LOUVERS *for Modern* ATTIC VENTILATION *Built by* AIR CONTROL



AIR CONTROL Attic-Louvers OVERCOME TWO MAJOR PROBLEMS IN THE MODERN INSULATED HOME.

In WINTER—lack of adequate ventilation in insulated attic spaces often causes condensation. Unless this moisture is eliminated, serious damage may result.

In SUMMER—the heat of the sun shining on the roof causes severe attic heat, resulting in warmer rooms below.

The installation of two or more ATTIC-LOUVERS results in adequate cross-ventilation and overcomes both of these annoying problems.

ATTIC-LOUVERS are designed to keep out rain and snow, yet have ample free area for natural air circulation. The galvanized wire screen insert keeps out insects—this screen may be easily removed and sheet metal or glass slipped into place if it is desired to close the opening. ATTIC-LOUVERS are built of heavy gauge galvanized steel, securely welded and finished in moisture-resisting paint—insuring long life and enduring service.

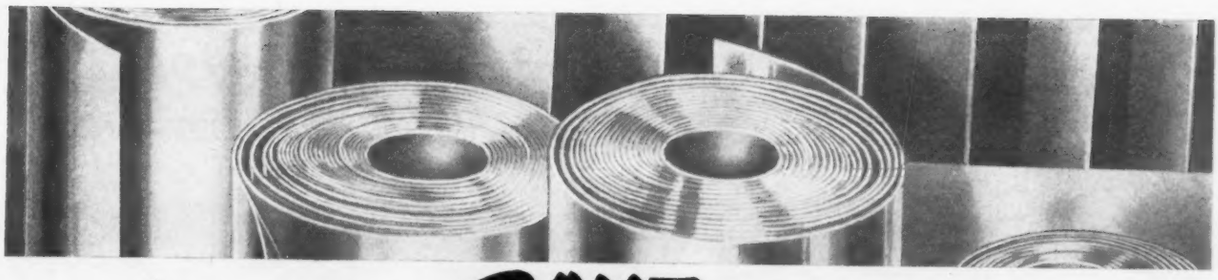
AIR CONTROL Attic-Louvers are the answer to your ventilation problems. Durable—Low in Cost—Easy to Install.

Order ATTIC-LOUVERS to-day from your AIR CONTROL JOBBER!

Other Air Control Products

Three complete lines of Air Conditioning Registers and Grilles—Dual Control Type Low Cost Directional Flow Type—Horizontal Fin Type. Adjustable Gravity Type Registers. "Better Built" Floor Registers and Faces. Damper Control Sets.

AIR CONTROL PRODUCTS, INC.
MUSKEGON MICHIGAN



You can SAVE production operations with HUSSEY COPPER!

HERE'S HOW...

UNIFORMITY — Always the same top quality—works easily, constantly.

WORKABILITY — A correct grade to do every job best—easy to process—easy to work.

MACHINABILITY — Machines cleanly—easily—to close tolerances—fine finishes.

WELDABILITY — Correct grades exactly suited to every copper welding application.

DUCTILITY — Strength with toughness in correct degrees for every copper need.

HARDNESS — When copper must be hard, too—look to Hussey for *your* copper needs.

STRENGTH — When tensiles must be accurate, there's a correct Hussey Copper for your job.

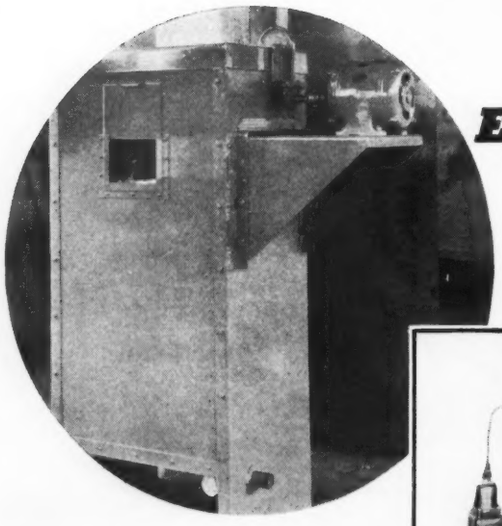
TECHNICAL ASSISTANCE — Let Hussey help you solve the copper working problems in *your* shop.

COPPER HUSSEY BRASS

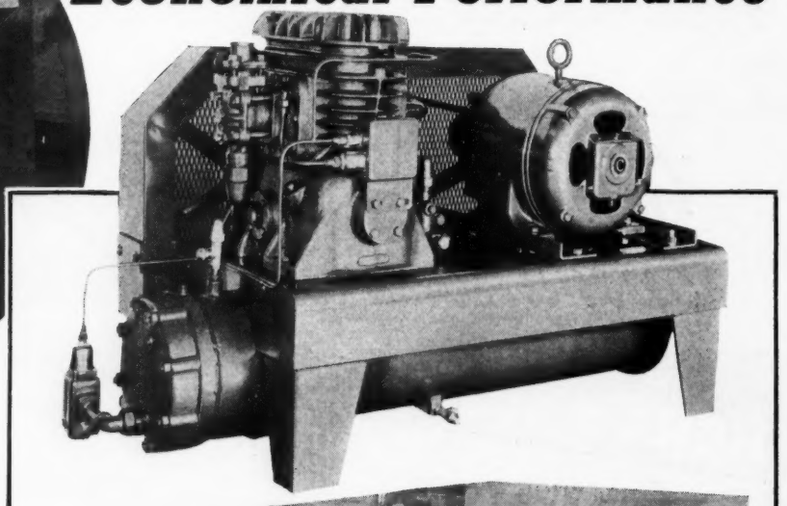
C. G. HUSSEY & COMPANY

(Division of Copper Range Co., Miners and Refiners of Pure Lake Copper)

Rolling Mills and General Offices:
PITTSBURGH, PA.
Warehouses in Principal Cities



For Smooth, Quiet, Economical Performance

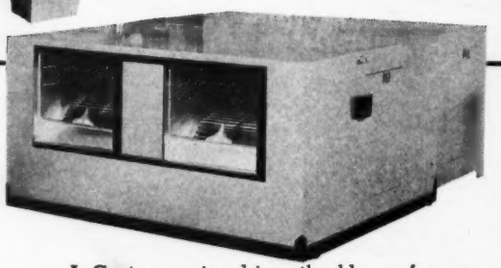


Above, Century Squirrel Cage Motor driving an air conditioning blower.
At right, Century Squirrel Cage Motor driving a compressor.

Use

CENTURY MOTORS

For ANY Air Conditioning Need



A Century motor drives the blower fans on this room cooler and heater unit.

● The *correct* motor drive is an important part of any air conditioning installation you may buy, install or specify. For to obtain maximum performance, the electric motor must accurately meet the starting, acceleration and running requirement of the machine, as well as be adapted to operate successfully in its particular surroundings.

For years, Century Motors have been designed and engineered to meet the demands of the entire air conditioning industry. Whether you need motors for unit heaters, unit coolers, stokers, fans, pumps, blowers or compressors, you'll find the right motor in the complete Century line of fractional and integral sizes —available in a wide variety of types.

For instance, Century Motors provide these advantages:

- ✓ Unusual freedom from electrical and mechanical vibration.
- ✓ Century's unique bearing bumpers reduce chatter from V-belt irregularities.
- ✓ Cushion base mountings isolate possible vibration from your installation.
- ✓ Quiet starting, quiet acceleration and quiet running, at all times.

The torque necessary to handle modern refrigeration compressors.

Your nearest Century Motor Specialist will gladly help you and your engineers to select the proper Century Motor to meet your specific application requirements. You'll find it pays to call him in—today.

CENTURY ELECTRIC COMPANY
1806 Pine St., St. Louis, Missouri
Offices and Stock Points in Principal Cities

226

Century MOTORS

One of the Largest Exclusive Motor and Generator Manufacturers in the World

Here's the new

WISE OIL-FIRED FURNACE

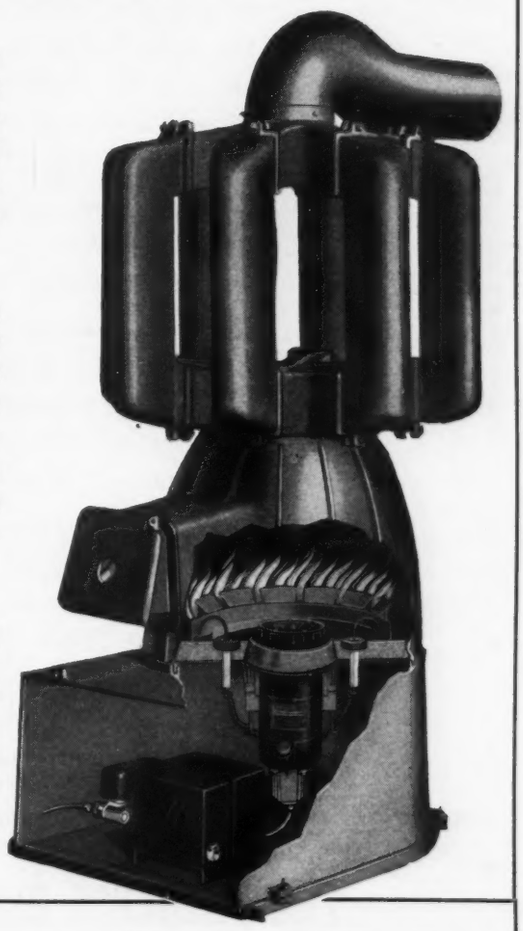
for

AIR CONDITIONING and GRAVITY HEATING

OVER 38 years of profitable partnership has taught heating dealers and contractors to look to Wise for the latest innovations in heating practice and design. Now Wise scores again with the new oil-fired air conditioning and gravity unit illustrated above; designed in the modern trend, with pleasing color and streamlined casing.

The utmost in economy and durability have been secured by equipping this unit with the latest type rotary wall flame burner shown in illustration at right. This, combined with immense heating surface providing long upward travel of the heat assures perfect safety and combustion. Tests have shown this unit to be highly efficient, free from the accumulation of soot and similar difficulties encountered in oil furnaces in the past.

Every furnace dealer and heating contractor knows the importance of being able to meet present day requirements with a complete and well-known line of heating equipment of all types, sizes and designs. With the introduction of this new Oil Fired Furnace, we firmly believe we can serve our dealers to better advantage than ever before. Write today for further details.



WISE FURNACE CO.

AKRON **OHIO**

50 Years of Progress

PEERLESS now begins its 50th year of business. During this expanse of time, Peerless has grown to its present size entirely by its own resources, without amalgamations, consolidations or mergers. The management of the company has been and still is directed by those identified with the founders of the business.

In fifty years, Peerless has passed through the national periods of war, prosperity, depression, political and economic upheavals and rejoices that it has been able to serve its customers through many trying times.

Today, new demands are being made upon us as on all others. Priorities determine to whom and when we shall ship Peerless products. This makes it difficult, sometimes, to supply our old friends of long standing in the same full measure that we have in the past.

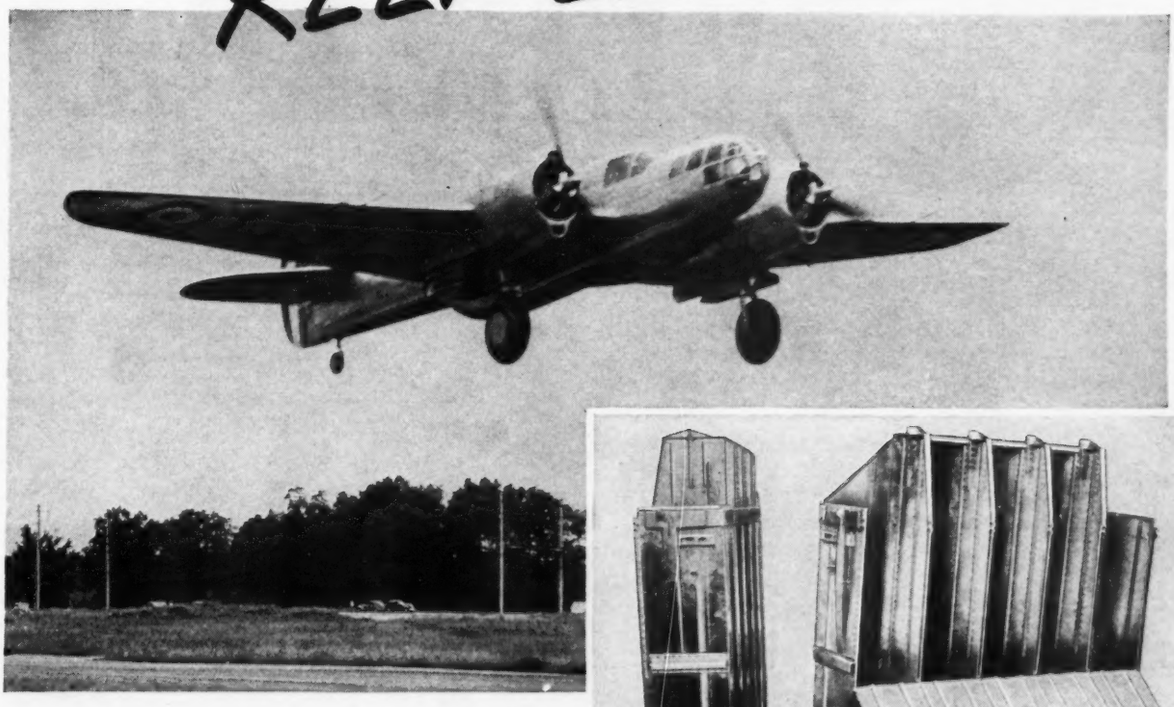
But the experiences of 50 years have proved that there always dawns a brighter day. Until that morning breaks —and after, too—we propose to meet your requirements to the best of our ability. All we ask is that you bear with us when immediate shipments cannot be made.

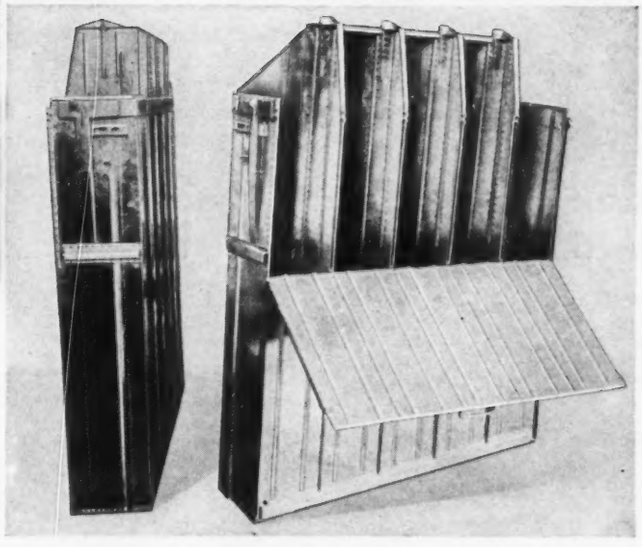
Ralph Krochle
PRESIDENT

THE PEERLESS ELECTRIC CO. • WARREN, OHIO

MOTORS • FANS • BLOWERS

Now STAINLESS Helps "KEEP 'EM FLYING"





Great quantities of ARMCO *Stainless Steel, the durably-bright metal of a thousand and one peacetime uses, now help keep Uncle Sam's war birds up in the blue. Pictured is a bomb rack, one of its many applications in military aircraft construction.*

Many grades of ARMCO Stainless Steel are giving their all for national defense. Both the Army and Navy are using these strong, rustless metals for an ever-increasing number of highly-specialized requirements—from galley equipment on warships to bomb racks on warplanes.

The great strength and toughness of stainless steels, their remarkable corrosion and abrasion resistance, and their ability to last long with little upkeep are saving lives for the services and tax dollars for citizens.

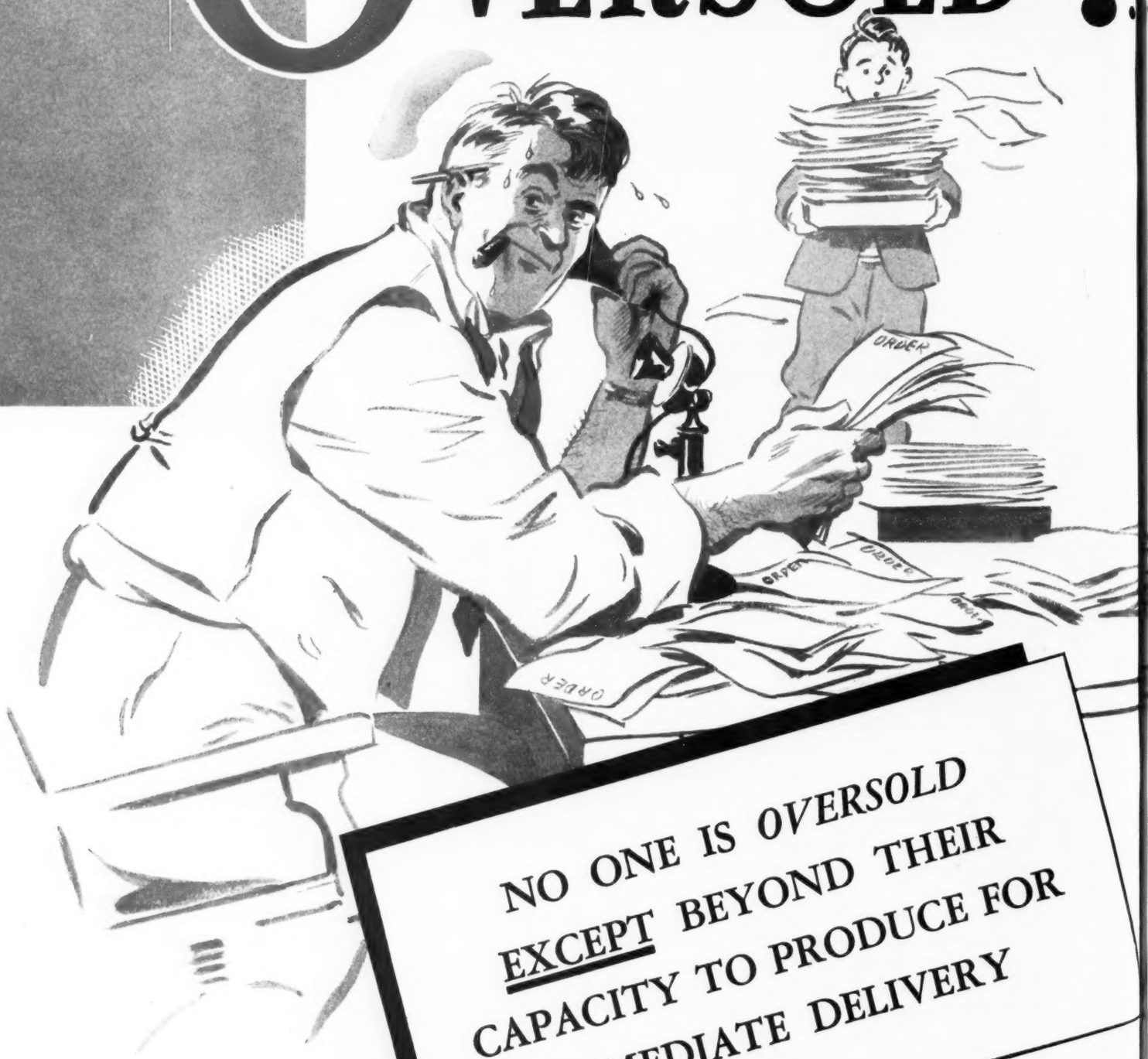
The priority lid is likely to stay clamped on certain grades of ARMCO Stainless during the emergency. As long as the need is there, sheet metal contractors will want to give the government program the right of way.

Yet there is certain to come a day when stainless steels again will be plentiful. You will have many future opportunities to profit from their unique beauty, remarkable durability and easy-forming qualities. In all the old uses as well as other applications *yet to be developed*, ARMCO Stainless Steels will help you please buyers and face future competition with confidence.

Meanwhile you'll want to keep posted on ARMCO Stainless developments. Whenever questions come up about grades and their applications for special work, be sure to write for the latest information. We'll be glad to assist in every way we can. The American Rolling Mill Co., 2571 Curtis St., Middletown, O.

ARMCO STAINLESS STEELS

"OVERSOLD?"



NO ONE IS *OVERSOLD*
EXCEPT BEYOND THEIR
CAPACITY TO PRODUCE FOR
IMMEDIATE DELIVERY

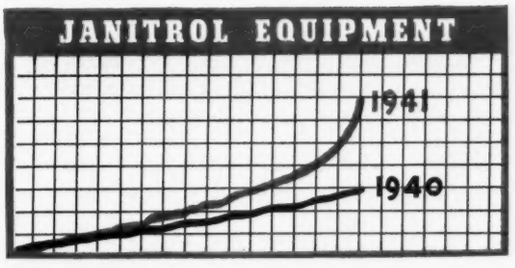
SURFACE COMBUSTION CORPORATION, TOLEDO

?....HELL NO!-!"

Neither you, nor we, nor the industry is oversold. We are merely underproduced for the meeting of an unprecedented demand for immediate shipments.

For the past several months our plants have been operating 24 hours a day. New men have been trained to produce, all facilities have been expanded to meet a rapidly growing consumer demand for Janitrol—and at the same time provide Janitrol equipment for the ever expanding defense program.

"Tough on You, Hard on Us, Too"



Our position is not unusual. It is typical of many companies making efficient, high quality products. It is usually the companies making the best products that are first to be oversold in a seller's market.

Take Janitrol for example. Shipments of other gas equipment increased *54.7% during the first seven months of 1941—Janitrol shipments increased 78.6%—simply because the present line of Janitrol conditioners, furnaces, unit heaters, burners and boilers is generally recognized as outstanding in efficiency, adaptability and economy.

Habit is a strong force. In the past 12 years, people were in no hurry to buy. Delivery could be made immediately; or if the equipment was not in stock it could be secured from the warehouse or the factory overnight. Consumers came to expect and demand delivery almost before the ink was dry on the contract. This can no longer be done. The customer now has the money to satisfy long suppressed wants and needs. Simply because delivery can't be made immediately, he gets the jitters—he fears he won't get what he wants—your salesmen may become discouraged and take an apathetic attitude, and we might easily take the position we're oversold, and doing the best we can.

Let's take a sensible long-range viewpoint of the situation. It's no time to stop selling, advertising or building a backlog of business. *It's the time to create a new consumer viewpoint.* An understanding of today's conditions—a willingness to wait for and accept delivery when the equipment is available.

We wouldn't stop our national defense program simply because tanks, guns, planes and ships couldn't be delivered tomorrow. If it's necessary and logical for us to wait for these vital needs, isn't it just as logical under today's conditions, to wait a few weeks for Janitrol equipment? Orders for machine tools are taken on a basis of 18 months delivery, industrial heat treat furnaces on 4 to 6 months—and we are all hoping for a two-ocean navy in 1944. If this is practical, then why shouldn't gas heating and appliance businesses be conducted on the same basis?

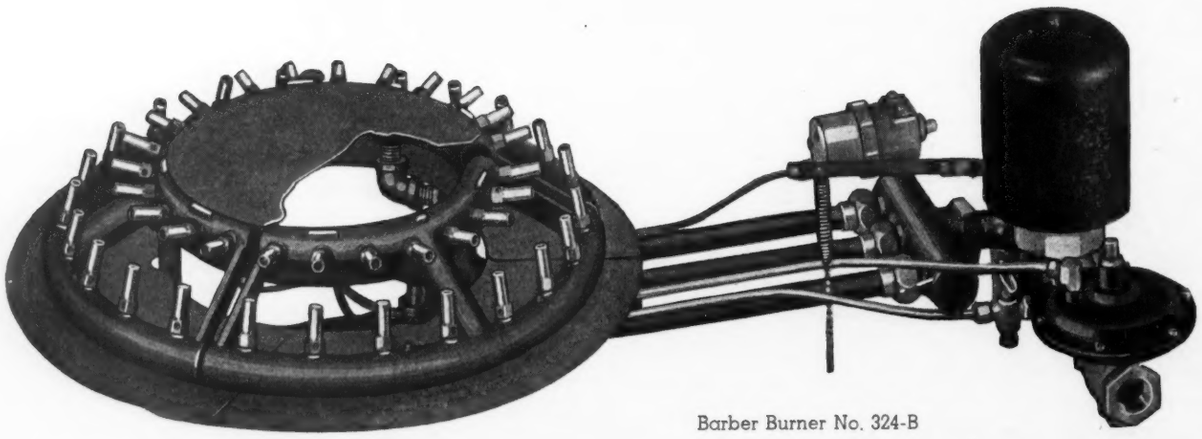
Deliveries may be slow. People may have to wait longer than they are accustomed to—but no one is oversold except beyond their capacity for immediate delivery. Keep selling—keep advertising—keep building good will and a better appreciation of your services. Get a surplus of good will and a backlog of orders. Keep going!

Yesterday was a buyer's market and history has an uncanny way of repeating itself.

*Fuel Oil Journal Report No. 164

TOLEDO OHIO • PRODUCERS OF

JANITROL
Gas Heating Equipment



Barber Burner No. 324-B

Equip Your **CONVERSION JOBS** with High Efficiency

BARBER BURNERS

For efficiency comparable to that of "new equipment" gas-fired furnaces or boilers—you naturally choose Barber Conversion Burners. Why? Because, not only in their TAILOR MADE FIT to the size and shape of the combustion chamber, but also in their direct flame application (without resort to intervening refractory or radiant elements) Barber Burners alone achieve this remarkable efficiency. This is the simplest and HOTTEST heat action available in any burner, on atmospheric pressure.

Exclusive, patented, unsurpassed Barber Jets secure, by the correct pre-mixture of gas and air, the high intensity (1900° temperature) air-activated flame, literally scrubbing firebox walls, which assures complete combustion PLUS straight-line focus of all heat generated where it is most resultful—on the actual heating surfaces. This principle is in accord with proved heating practice and Barber is the original burner to use it.

Remember that if your customer now has thermostat and draft controls, these can easily be used in connection with our quick-acting gas valve, thus saving on automatic controls.

For top satisfaction on your conversion jobs—recommend and use Barber Burners!

Made in complete range of types and sizes for both round or oblong furnaces and boilers — all models easily and properly adjustable to grate sizes. Listed in A. G. A. Directory of Approved Appliances. Write for new Catalog and Prices on Conversion Burners, Appliance Burners and Regulators.

THE BARBER GAS BURNER COMPANY

3704 Superior Avenue
Cleveland, Ohio

Address Michigan Inquiries to
The Barber Gas Burner Company of Michigan
4475 Cass Ave., Detroit, Michigan

BARBER BURNERS AND REGULATORS ARE DESIGNED FOR

Air Conditioning Equipment • High Pressure Boilers (Tubular and Tubeless) • Bakery Ovens • Doughnut Kettles • Metal Pots • Garage Heaters • Coffee Urns • Hair Dryers • Space Heaters • Floor Furnaces • Clothes Dryers • Water Heaters • Confectioners' Stoves • Vulcanizing Machines • Pressing Machine Boilers • Japanning Ovens • Core Ovens • Banana Room Heaters and many other Appliances.

Star performance at the heart of the gas appliance—The BURNER!

BARBER *Automatic* JET GAS BURNERS

FIRST STEP IN ASSURING QUIET OPERATION

Specifying a motor that contributes to the quiet operation of an air-conditioning or ventilating installation is a job that belongs to everybody concerned . . . too often to nobody in particular! That's why it is important for you to protect your interests by specifying a quiet-running motor:

Specify Dynamically Balanced DELCO MOTORS

Delco motors safeguard against vibration noise transmitted by ducts, because all Delco motors are dynamically balanced on a special machine developed by Delco Products. Shaft and bearing surfaces are machined to exceptionally close limits to further reduce vibration, and an improved resilient-base mounting cushions the rotor from the frame. For V-belt drives, there is the Delco End-Play Take-up Device.

Quiet starting, too, is assured by the Delco Centrifugal Switch, which eliminates "fluttering" when the motor goes into operation; and complete protection against overload and overheating is provided by the Delco Thermotron—listed by Underwriters.

Specify Delco motors for all heating and air-conditioning applications, and give your customers the satisfaction of quiet operation and low maintenance. Consult the Delco Products Engineering Department for recommendations.

DELCO MOTORS

DIVISION OF GENERAL MOTORS CORPORATION

DELCO PRODUCTS DAYTON, OHIO

New Business—New Profits are yours with **WEIRTON** Galvanized Sheets

With these improved galvanized sheets you get three important advantages — easy workability — superior finish — and adherence of coating — all combined to help you turn out better products at low cost. You will find, too, that greater customer satisfaction will result from using Weirton Galvanized Sheets. For that next job, specify or use WEIRTON.

LIST OF PRODUCTS

Bars . . . Angles . . . Structurals . . . Piling . . . Hot and Cold Rolled Strip . . . Hot and Cold Rolled Sheets . . . Galvanized Sheets . . . Long Terne Sheets . . . WEIRITE Cold Reduced Tin Plate . . . Terne Plate —Special Coated and Roofing Ternes . . . Tin Mill Black Plate . . . Lacqured Tin Plate and Black Plate.

WEIRTON STEEL COMPANY—WEIRTON, WEST VIRGINIA

Sales Offices in Principal Cities

division of NATIONAL STEEL

NATIONAL STEEL CORPORATION

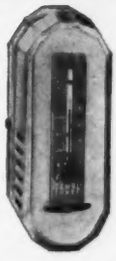
Executive Offices, Pittsburgh, Pa.

YES SIR. The big money today is in the homes and buildings that have hand fired heating plants. They outnumber automatic jobs 10 to 1. They want and can afford to buy simplified, dependable, economical temperature control.

Why search for profit opportunities . . . you have the best ones right in your own community, right among your own customers and prospects. Sell them Cook Simplified Temperature Control Systems!

Ask us to show you how you can make 10 sales, 10 satisfied customers and 10 big profits out of every 11 prospects you have! Write today for complete details.

COOK ELECTRIC COMPANY
APPLIANCE DIVISION
2702 SOUTHPORT AVENUE • CHICAGO, ILLINOIS



Cook "400" Heat Regulator Sets give you maximum installation convenience and profit and give your customers greater economy and satisfaction. Here are a few "400" features:

Syncro-Action for perfect synchronization of rate of combustion of any solid fuel with any heat requirements.

No danger of overheating or fire. Current failure or blown fuse causes safety feature to close draft and open check insuring complete safety.

Clutch puts damper arm in neutral position with draft and check closed for smokeless and gasless firing. No service. No gears to grind, no bearings to oil, no batteries to wear out. Guaranteed for five years.

The "400" Heat Control Set includes everything needed for quick, easy installation. Modern design and styling.

COOK ELECTRIC COMPANY,
2702 Southport Avenue,
Chicago, Illinois

Please send me at once FREE copies of "How to Sell Heating Appliances" and "Simplified Temperature Control."

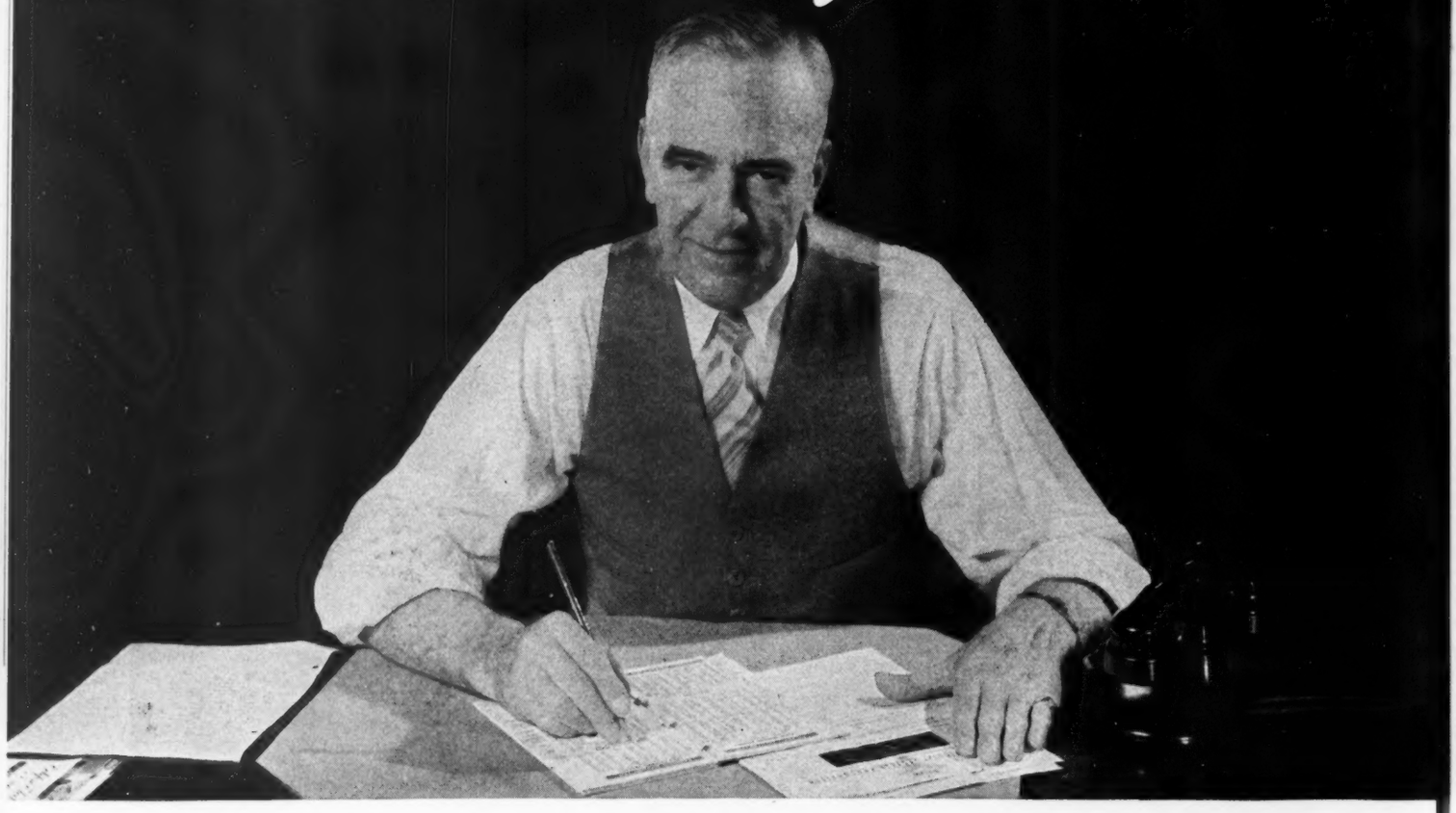
Name_____

Address_____

City and State_____

2

He'd rather say "YES!"



● When a friend needs your help — needs it urgently — you like to say "YES!"

But sometimes, for unavoidable reasons, you are forced to say "NO!"

How you hate to say it!

That's just the way your Republic Sheet Distributor feels when he may be unable to fill your order for Republic Steel, U-Loy Copper-Bearing Steel, Toncan* Iron and Enduro* Stainless Steel Sheets or Taylor Roofing Ternes with his customary speed.

To you — his friends — his customers who have learned to depend upon him for steel products —he may have to say "NO" when he'd rather say "YES."

He built his business, invested his money, trained his organization with one objective in mind—to give you service—to furnish you with products of dependable quality when you needed them. And now he may not be able to supply all your order.

The reason is well known. To protect all of us—our businesses, our homes—National Defense must —*AND WILL*—come first. Much of your distributor's stock is going to producers of defense equipment. And because defense has first call on many materials, he cannot replenish his ordinarily complete stocks as quickly as in days gone by.

Yet—he still wants to help you in every way possible. See him first. If the items you need are available for your use, he still may be able to save you valuable time.

REPUBLIC STEEL CORPORATION

General Offices: Cleveland, Ohio

Berger Manufacturing Division • Culvert Division • Niles Steel Products Division
Steel and Tubes Division • Union Drawn Steel Division • Truscon Steel Company

*Reg. U. S. Pat. Off.

REPUBLIC STEEL SHEETS

Vol. 110 American Artisan No. 10

"Green Light" For Defense Housing

WE HAVE been calling attention in several past issues to the Defense Housing Rating Plan. George Boeddener, as N. W. A. H. & A. C. Ass'n Managing Director, has explained the plan and emphasized its potential importance to our industry; Arnold Kruckman has reported areas under consideration and definitely assigned and has outlined what Washington hopes this plan will accomplish; we, editorially, have asked readers to study the plan in order to appreciate the plan's importance.

Now the Defense Housing Rating Plan has been put into effect in 277 areas. A complete report of the plan and the areas is published in this issue. Again, we strongly urge readers to study this scheme and to lay plans to capitalize on its potentialities.

In the belief that too much publicity cannot be given this plan we wish to point out a few of the major possibilities.

First of all the 277 areas designated are identical with the areas in which house construction and reconstruction have been active for months and years. Or these are the areas where greatly increased industrial activity has brought in a flood of new workers who must be housed before winter.

Secondly, it should be noted that whereas the various constructing departments of the government will build 100,000 housing units the same departments make it plain that they expect private capital and the building industry to complete at least 200,000 additional housing units.

Who is going to buy the furnaces for the government-built units we don't know, but we do know who will buy the furnaces for the privately-built homes. The contractors of this industry.

By far the most important part of this plan is the emphasis government is placing on repair, replacement and reconstruction of existing buildings to make additional living quarters for workers. Note that this type of building reconstruction has been given the highest priority rating for materials and equipment. Note, also, that construction of new houses selling under $6,000 and construction of houses to rent for $50 a month or less do not get as high a priority as reconstruction.

The intention, obviously, is three-fold: 1—To get additional housing as quickly as possible; 2—to get this housing as cheaply as possible; 3—to get this needed housing at a minimum expenditure of materials.

With this plan our industry should have no quarrel. Repair, replacement, reconditioning of old heating systems, in most areas and for reasons which need no discussion here since everyone knows them, has been more profitable than new house work. We can be happy that government is placing its official approval on a program to stimulate demand for more repair, replacement, reconditioning.

That heating will be a major purchase item in this drive for additional living quarters goes without argument. Under Title 1 (authority for FHA to insure property improvement loans) purchase of new heating equipment and reconditioning of existing plants represent 12.4 per cent of all expenditures made by owners improving their property. Only one other item (exterior painting) accounted for as large a slice of the public's dollar.

It is safe to assume that these heating plants reconditioned under Title 1 represent *needed* improvement—people bought heating equipment because heating equipment was badly needed. Unquestionably heating plant reconditioning will be just as necessary in the buildings to be made over as it was in the buildings improved up to date.

(*Continued on page* 106)

Defense Housing Rating Plan Is Now In Effect

THE Defense Housing Rating Plan, which this industry has been so anxiously awaiting was announced on September 18 by Donald M. Nelson, Director of Priorities.

The Defense Housing Rating Plan is the program under which defense industry workers will be provided with housing publicly and privately financed. The publicly financed projects have been under way for some time; privately financed projects have been delayed by builders' and contractors' inability to obtain needed materials and equipment.

This plan was explained several times in previous issues. The plan goes into effect substantially as explained. Priority assistance has been granted for the construction of 200,000 privately financed houses. The materials provided for by priority rating constitute a lengthy list, but we show those materials used by our industry which are covered by priority.

As explained, the country was surveyed to determine how many housing units were needed and where. Then each community needing housing is given a priority rating under which the builder and all his contractors may obtain materials. Highest ratings are assigned to areas needing housing worst and to defense projects which were already under construction on September 1, 1941. Lower ratings will be granted to new construction for rent and still lower rating to new construction for sale.

All defense housing will be in the "A" class.

The announcement follows:

OFFICE OF PRODUCTION MANAGEMENT

Procedure for Obtaining Preference Rating for Privately-Owned Defense Housing Construction

1. Provision by private enterprise of adequate housing for defense workers is essential to the success of the national defense program.

2. The Office of Production Management has approved the granting of priority rating to 200,000 housing units, privately financed and qualifying as defense housing.

To expedite the production of needed housing, preference ratings will be graduated, the highest rating will be granted to projects under construction as of September 1, 1941, and to remodeling and rehabilitation. A lower rating will be granted to new construction for rent, and a still lower rating to new construction for sale.

3. To qualify as defense housing, a private project shall be:

(a) located within a reasonable commuting distance from the place or places of defense employment in any of the Defense Housing Critical Areas included in the list of such areas attached hereto;

(b) intended primarily, suitable for, and available to workers engaged or to be engaged in one of the defense activities within the area, and shall include the customary equipment and appurtenances necessary to occupancy, and may include stores and other facilities necessary to community life, not otherwise available;

(c) Offered at a sales price or rental within reach of the defense workers for whose occupancy the housing is intended; provided the estimated market price shall not exceed $6,000 per family unit if for sale, or the estimated shelter rental shall not exceed $50 per month per family unit, except where extreme circumstances may require that units exceeding these limits be provided.

4. The preference rating granted to a project will apply only to the materials, products and items of equipment included in the Defense Housing Critical List hereto attached, and in such quantities as the Office of Production Management may permit under the order granted.

5. To obtain a preference rating for a defense housing project, as defined under "3" hereof, the user of the materials, products and items of equipment, the builder may file with the local office of the Federal Housing Administration an application for a priority order. Copies of this application form may be obtained from such local office or from local home financing institutions. The form shall be executed in quintuplicate. The applicant shall certify thereon:

(a) that the items of material or equipment to be purchased are necessary to the completion of the construction or remodeling or rehabilitation,

(b) that no practical substitute or alternative source of supply is available,

(c) that quantities are not greater nor delivery dates earlier than required,

(d) that the rehabilitation shall create or make habitable increased living accommodations.

The Application must also contain a Certificate signed by the owner of the property, containing

(a) a statement showing the estimated present market price of the property (including land and proposed buildings), or the estimated monthly shelter rental (excluding charge for services such as light, heat, etc.) per dwelling unit under present market conditions;

(b) a statement showing the sale price or monthly shelter rental which he proposes to charge; and

(c) a certification that he will give reasonable preference as to occupancy to defense workers.

One set of drawings and specifications showing design and materials must be submitted with the original Application.

At the end of the Application Form is a form, to be

executed by the local office of the Federal Housing Administration.

The statement of the Federal Housing Administrator does not in any way indicate that the property has been or will be approved for insurance under the National Housing Act and is in no way conditioned upon or connected with the filing of any application for such insurance.

A project shall not be considered as qualifying as defense housing unless the Application discloses that the intended work

(a) is defense housing as defined herein, and

(b) complies with such rules and regulations as may be issued from time to time governing priorities and standards for defense housing.

The Application will be reviewed by the Defense Housing Coordinator and if approved by him will be submitted to the Priorities Division of the Office of Production Management with a recommendation that the project be assigned a Project Preference Rating. Such rating shall be subject to extension in accordance with safeguards to be defined by the Priorities Division.

The Director of Priorities is making use of the facilities of the FHA as a ready means of immediate assistance. This special service of the FHA is completely divorced from and has no connection with its underwriting activities as a mortgage insurance agency. All applications for preference ratings will be processed without regard to the type of financing used.

The procedure herein set forth shall be subject to such modifications as the Director of Priorities may from time to time deem necessary or appropriate.

September 12, 1941

Donald M. Nelson
Director of Priorities
Office of Production Management

Defense Housing Critical List

Notes:

1. This list is based upon the critical position of the materials involved as of the date of issue hereof and, since that position may change at any time, this list is subject to revision whenever affecting circumstances warrant such action.

2. Herein included are all items for which priorities assistance will be given for the construction of defense housing, including Government owned, or assisted, and privately financed. Any materials under priority control not listed herein and which may be deemed essential in a given project by those constructing it, shall be handled as an independent item for priority consideration and will be considered on its merits in relation to that project.

3. Any material not requiring priority assistance may be used in any defense housing project at the discretion of those constructing the project, provided such use of the material is consistent with any other regulation that may govern the project.

4. The preference rating granted to a project will apply only to the materials listed herein and only in such quantities as the Office of Production Management may permit under the order granted. This limitation, unless otherwise defined, shall lie within the limits of good practice.

Heating and Ventilating Equipment—
to include only:

1. Boilers—Furnaces only for items noted below:
   a. Boilers—ferrous metal with brass safety devices and cocks, limited to minimum practicable.
   b. Furnaces—ferrous metal with zinc coated casings, interliners and baffles for gravity furnaces and with zinc coated interliners where used in forced warm air furnaces.
   c. Breechings—ferrous metal non-metallic coated.
   d. Floor furnaces, space heaters, stoves and other similar heating devices, wherever practicable and where they may replace the above.
   e. Vents—ferrous metal, non-metallic coated.
2. Accessories—consisting only of:
   a. Pumps.
      (1) Water circulators (2) Condensation (3) Vacuum R.L.
   b. Fans, Blowers and Motors—Centrifugal—forced warm air systems only.
      —Propeller—large exhaust on large multi-family units.
   c. Oil Storage Tanks ferrous metal—non-metallic coated, size limited to minimum necessary, for example, not to exceed 275 gallons capacity for plants serving less than five families).
   d. Expansion tanks for hot water systems—ferrous metal, non-metallic coated.
3. Distribution Materials—consisting only of:
   a. Piping—ferrous metal, uncoated
   b. Fittings—Cast ferrous metal, uncoated
   c. Valves—Vent, Gate, Globe, Cocks.
   d. Traps—central steam systems for multi-family dwellings only.
   e. Ducts and connections.
      (1) Ferrous metal phosphate treated and painted or untreated*
      (2) Bright tin
   f. Hangers and brackets.
      (1) Strap iron
      (2) Cast iron
4. Radiators, Convectors and Registers—only for items noted below:
   a. Radiators and convectors of cast iron, without metal enclosures.
   b. Valves.
   c. Traps—Radiator, for multi-family dwellings only, yellow brass unplated.
   d. Registers and Grilles.
      (1) Stamped or cast ferrous metal
      (2) Fabricated steel optional for large units in floor
5. Firing Equipment—only for items listed below:
   a. Oil, gas and coal burners
      NOTE: Oil burners eliminated from eastern seaboard area.
6. Control Equipment—only for items listed below:
   a. Damper Regulators
   b. Thermostats
   c. Pressure Controls
      (1) Pressure Reducing Valves—Multi-family only
      (2) Pressure stats
      (3) Pressure Relief Valves
   d. Relays
      NOTE: Above items to be reduced to minimum and plating eliminated.

*"Phosphate treated" is a galvanized sheet given a phosphate wash to make painting immediately possible.

Defense Housing Critical Areas

Alabama
Anniston
Birmingham
Childersburg-Sylcauga-Talladega
Gadsden
Mobile
Montgomery
Muscle Shoals
Phenix City
Selma

Arizona
Litchfield Park
Tuscon

Arkansas
Hope
Little Rock-Jacksonville
Ft. Smith

California
Los Angeles
Bakersfield
Fresno
Monterey
Oceanside-Fall Brook
San Diego
San Francisco and East Bay Cities
San Luis Obispo
San Miguel-Paso Robles
Stockton
Vallejo

Colorado
Denver

Connecticut
Bantam
Bridgeport
Hartford
Meriden
Middletown
New Britain-Bristol
New Haven
New London
Stamford
Waterbury

Delaware
Wilmington

District of Columbia
Washington

Florida
Cocoa
Jacksonville
Key West
Opa Locka
Orlando
Panama City
Pensacola
Starke
Tallahassee
Tampa
Valparaiso
West Palm Beach

Georgia
Albany
Atlanta
Augusta
Columbus
Hinesville
Macon
Roseville
Savannah
Toccoa
Valdosta

Idaho
Boise

Illinois
Alton
Chicago-Waukegan
Davenport-Rock Island
Joliet-Wilmington
Rantoul
Rockford
Savanna

Indiana
Anderson
Charleston-Jefferson-Louisville, Ky.
Connersville
Ft. Wayne
Gary-Hammond
Indianapolis
La Fayette
La Porte-Kingsbury
Madison
South Bend
Evansville, Ind.-Henderson, Ky.

Iowa
Burlington
Council Bluffs
Des Moines

Kansas
Junction City
Kansas City
Parsons
Wichita

Kentucky
Louisville-Charlestown

Louisiana
Alexandria
Baton Rouge
Lake Charles
Leesville-DeRidder
New Orleans
Shreveport

Maine
Bangor
Bath
Portland

Maryland
Aberdeen
Annapolis
Baltimore
Elkton
Hagerstown

Massachusetts
Boston
Falmouth
Greenfield
Pittsfield
Springfield-Holyoke
Worcester

Michigan
Bay City-Saginaw
Battle Creek
Detroit-Ypsilanti
Lansing
Midland
Muskegon
Pontiac

Minnesota
Minneapolis-St. Paul

Mississippi
Biloxi
Columbus
Greenville
Hattiesburg
Jackson
Meridian
Pascagoula

Missouri
Joplin-Neosho
St. Louis
Springfield
Waynesville-Rolla

Nebraska
Omaha-Council Bluffs

Nevada
Hawthorne
Las Vegas

New Hampshire
Manchester
Portsmouth

New Jersey
Bayonne-Staten Island
Bound Brook-Perth Amboy
Dover
Newark-Kearney-Elizabeth
New Brunswick
Patterson-Passaic
Trenton

New Mexico
Gallup

New York
Bethpage-Farmingdale
Binghamton
Brooklyn-Long Island City
Buffalo-Niagara Falls
Dunkirk
Elmira
Greenport
Massena
Poughkeepsie
Rochester
Schenectady
Sidney
Syracuse
Troy-Watervliet-Albany
Utica-Rome
Watertown

North Carolina
Charlotte
Fayetteville
Jacksonville-Morehead City
New Bern
Wilmington

Ohio
Akron
Canton-Massillon-Alliance
Cincinnati
Cleveland
Columbus
Dayton
Hamilton-Middletown
Lorain-Elyria
Mansfield
Ravenna-Warren
Sandusky
Sidney
Springfield
Steubenville
Toledo
Youngstown-Sharon, Pa.

Oklahoma
Enid
Lawton
Oklahoma City
Tulsa

Oregon
Astoria
Hermiston
Pendleton
Portland

Pennsylvania
Allentown-Bethlehem-Philipsburg
Beaver County
Berwick
Coatesville
Corry
Ellwood City
Erie
Harrisburg-Middletown
Johnstown
Latrobe-Greensburg
Monessen-Charleroi
Norristown-Bridgeport
Philadelphia-Camden-Chester
Pittsburgh-New Kensington
Pottstown
Sharon
Titusville
Warren-Irvine
Williamsport
York

Rhode Island
Newport
Quonset Point

South Carolina
Charleston
Columbia
Spartanburg
Sumter

Tennessee
Bristol-Kingsport
Chattanooga-Cleveland
Knoxville-Alcoa
Memphis-Millington
Milan-Humboldt-Jackson
Nashville
Tullahoma

Texas
Abilene
Beaumont-Orange-Port Arthur
Brackettville
Brady
Brownwood
Corpus Christi
Cuero
Dallas-Ft. Worth
Denison-Sherman
Dumas
El Paso
Freeport
Galveston
Harlingen
Houston
Lubbock
Midland
Mineral Wells
Palacios

(*Continued on page* 112)

Plan Used by Chicago Associations May Get

Equitable Recognition For Our Industry

WITHIN the last few weeks four policies affecting in a major measure the warm air heating-sheet metal contracting industry have been announced by government agencies. These policies are: 1) the placing in operation of the Defense Housing Rating Plan; 2) the establishment of the Contract Distribution Division in OPM; 3) the announcement of order P-22 to provide materials for maintenance; 4) the granting of a blanket A-9 priority rating to steel warehouses to enable jobbers to sell sheets to civilian users within an established quantity quota.

Complete reports of these policy announcements are published in "Defense Developments" in this issue. We suggest a careful reading.

We Need Additional Material Sources

Beneficial as these policies may be, there are still some gaps which we, as an industry, would like to see filled. This perhaps can best be explained by a quick review of the benefits and shortcomings of the above four policies.

1) The Defense Housing Rating Plan makes available to warm air heating contractors and manufacturers materials required to manufacture and install heating plants in some 200,000 new houses in 277 areas. But we are shooting at 600,000 new house units—not only in critical defense areas but in other areas.

2) The Contract Distribution Division seeks to break up armament contracts so that hundreds or thousands of small shops can get sub-contracts. The rub comes from the fact that sheet metal working shops are a drug on the market and there isn't enough war work to begin to keep our shops busy.

3) Order P-22 makes materials available for a long list of such institutions as public carriers, chemical and explosives plants, hospitals, mines, laboratories, etc. (see item in Defense Developments), but the order does not provide materials needed for protection, ventilation, air conditioning of the tens of thousands of stores, factories, buildings not directly concerned with war work or war service.

4) The A-9 priority for warehouses is a step in the right direction, but can and may fall far short of providing materials in quantities needed to keep the shops of our industry operating at anything like normal production.

So—much as we appreciate these policies which help our industry, there is no harm in wishing for increased supplies. How are these supplies to be secured?

Chicago Committee to Washington

Perhaps there is a basis for some industry-wide action in an extension of a plan promulgated in Chicago. In Chicago there are three associations employing union mechanics. These are—Ventilating and Air Conditioning Contractors Association of Chicago; Air Conditioning Contractors Alliance; Sheet Metal Contractors Association of Cook County. What these three groups do is explained in the Brief following.

A committee to represent these three groups plus a fourth member to represent the union was chosen consisting of Chairman Louis L. Narowetz, Jr., Aubrey Sykes, J. Harvey Manny, James Close. The committee was instructed to carry to Washington and to present to the proper individuals or agencies a Brief prepared by the Joint Arbitration Board. The purpose of the Brief was to make understandable to Washington, what the situation is in Chicago, what seems to be needed, who does the different types of work and to suggest what can be done.

The committee was cordially welcomed by the highest authorities. The committee was, in the words of one high official—"The first delegation to come prepared to assist and explain rather than to demand an immediate and high priority number for any and all kinds of materials used for any and all kinds of work."

Conducted by labor leaders and sponsored by them, the committee secured interviews at once.

The point of most interest, declares Chairman Narowetz, is the fact that Washington high officials and agencies are thirsty for correct information. Individuals are gentlemen of the highest caliber; conscientious in the highest degree; sincerely anxious to help an industry to secure just and equitable hearings. These gentlemen do not welcome groups with selfish interests who want all for themselves and nothing for others.

Just what definite accomplishments can be claimed by this committee is difficult to say—but it is true that the interviews quite likely set straight the thinking of several key individuals so far as our industry and its importance is concerned.

All the Industry Can Help

The main idea left by the committee was that ours is an essential industry contributing definitely to welfare, health, and comfort of workers directly and indirectly engaged in war work and aiding the continued progress of war work industries themselves. This, in itself, is surely a major accomplishment.

But this ground work can be widely extended. The foundation laid can be permanently cemented. How? Union labor has seen fit to champion our cause. Union labor is willing to continue to advance our claims if we as an industry, will furnish the ammunition.

What is necessary is factual data showing industries which want to build but can't; workers who want to build or buy homes but can't; public construction needed but postponed because of a lack of materials; repairs and reconstruction needed but stopped; commercial construction indefinitely postponed.

Not in the 277 critical defense areas; not those industries whose war work entitles them to priorities—but construction in areas where there is nothing to help people obtain materials.

Our industry can help by sending information to the office of Grand President Robert Byron of the Interna-

(Continued on page 114)

Defense Developments

Looking for a Sub-Contract?

As a service to contractors who would like to contact prime contractors for the purpose of obtaining sub-contracts, AMERICAN ARTISAN believes it can be of help to fabricators in the middle west through a contact made with a firm which is handling sub-contracts. This firm has access to many varieties and sizes of sub-contract orders; this firm is also in a position to analyze the fabricators facilities to determine what he can make; this firm is also setting up ways and means to provide the inspection and operating preliminaries so necessary to the successful completion of a sub-contract.

Readers interested can obtain consideration by sending to AMERICAN ARTISAN a letter giving full information covering the following data.

1. Number of square feet of floor area in your plant which you can devote to sub-contract work.
2. A list of fabricated products you have made (state quantities) or items now in production.
3. Number of (mechanics and helpers) you now have working *inside.*
4. Approximate number of mechanics you can hire if you need them.
5. Detailed list of equipment by *capacity* and *model number.* State—Model Number; Manufacturers' name; Machine capacity; Machine's age. Note—Sub-contract orders especially require—Press Brakes; Power Shears; Power Nibblers; Circle Shears; Punch Presses; Welding equipment (give KVA and throat depth of spot welders; list arc welders by capacity; specify acetylene welding equipment; do you have cutting torches?
6. What tolerances can you work to on each machine?
7. How many weekly man hours can you assign to defense work?

Of course, all information will be held confidential and given only to the sub-contract firm.

◆

Priority Aid Granted for 200,000 Privately Financed Housing Units

DETAILS of a broad plan to grant priority assistance for the construction of 200,000 privately financed defense housing units were announced September 19 by Priorities Director Nelson following approval of the plan in principle by the Council of the Office of Production Management. The order implementing the plan was to become effective September 22.

The new procedures will assure priority aid for 200,000 privately financed homes for defense workers. Other arrangements have already been made for granting priority assistance to 100,000 publicly financed units.

(*This program is published in complete detail in this issue.*)

Plants manufacturing tanks, guns, shells, and other essentials of national defense, cannot be operated, and ships cannot be built without workers, and workers must have places to live. The production of housing has been in competition with the production of other defense essentials, and was delayed because the scarce materials needed for both were diverted by priorities from housing into other uses.

Because of this, a decision had to be made to regulate the flow of critical materials to insure the necessary supply for housing.

The construction of new defense plants and the development of new industrial areas have shifted the centers of employment.

This makes it necessary to provide new, adequate, and convenient housing for workers—close to the job—even if this means additional difficulties for the construction of other residential housing not essential to the success of the national defense program.

◆

Contract Distribution Division Created

PRESIDENT ROOSEVELT on September 4 created within the Office of Production Management the Division of Contract Distribution, in a determined effort to save small business units by putting them to work on defense and thus also to marshal every possible facility for vitally needed production.

Floyd B. Odlum was appointed director.

The personnel of OPM's Defense Contract Service will be transferred to the new division. This division is to be known as the Division of Contract Distribution and is to be coordinate with the existing divisions—Procurement, Production, Priorities, Labor and Civilian Supply.

Through this Division, the Office of Production Management will be enabled more effectively to adjust the dislocations and alleviate unemployment resulting from priorities and material shortages, and bring about maximum use of the nation's factories and industrial plants, especially the smaller ones throughout the nation through four major steps:

1. The breaking down of large orders of supplies into smaller units, and spreading the purchases among more firms and in all localities possible.
2. Providing assistance through the Labor Division of OPM in retraining and obtaining reemployment for workers who are unemployed as a result of the shutting down of some plants or reduction of their output.
3. The effective distribution of defense contracts to the smaller business enterprises, as yet largely unused, through an expanded use of subcontracting, contract distribution, and the pooling of plant facilities.
4. By providing a staff of industrial and production engineers to formulate and execute specific plans for the conversion of nondefense industries and plants to defense production.

The Division of Contract Distribution will have branch offices located in the various States.

The Division of Contract Distribution will provide

an industrial engineering staff whose responsibility it will be to obtain the maximum use of existing facilities and tools by assisting manufacturers and business enterprises in making the necessary changes in their tools and equipment for effective use in defense production.

In the various cities will be established exhibits or "market places" where there will be displayed specific parts—"bits and pieces"—the components needed for defense production. These "bits and pieces" will be labeled as to the quantities needed and the machine tools and operations required for their production so that any shop owner or manufacturer can determine whether his facilities are capable of producing such items.

Sub-contracting arrangements can then be entered into on the basis of what an individual sees he is capable of doing, receiving then and there the expert industrial and engineering judgment of those whose assistance he may desire.

The Division of Contract Distribution will also provide through the regular commercial banking channels, the Reconstruction Finance Corporation, including the Defense Supplies Corporation and the Defense Plant Corporation, and the Federal Reserve Banks and their branches, the necessary financing facilities for local industrial production associations, prime contractors and subcontractors, and will recommend whenever necessary such additional financial procedures and machinery as may be required to obtain the maximum utilization of existing plant and tool facilities for defense purposes.

◆

20 Industries Get Repair Aid

A NEW plan to grant priority assistance for repair work in certain essential industries was announced September 9. It represents an effort to keep American defense industries running at full speed, and to prevent any break in the increasing tempo of defense production.

The new plan takes the place of the Maintenance and Repair Order announcement August 8, but never actually issued.

The new plan provides priority status for repair work in twenty industrial classifications so that firms in these classifications may obtain repair parts promptly.

For Repairs and "Emergency Inventory"

The scheme permits qualified producers or suppliers to apply a preference rating of A-10 to deliveries of required repair parts by endorsing a special statement on purchase orders, certifying that the material being ordered is for repair work under the terms of the order, P-22.

The order can be used also to get deliveries for "emergency inventory."

Repairs are defined in the order as repairs needed because of an actual or imminent break-down. Emergency inventory is defined in the order as the minimum inventory of material required to provide for repairs to meet an actual or imminent break-down.

Other classifications may be added from time to time. The classes in the present order are as follows:

1. Federal, State, county, and municipal services: Fire and police services; Highway maintenance.
2. Carriers:

(a) Urban, suburban, interurban, and intercity common, contract, and private carriers of passengers or freight by electric railway, electric coach, motortruck, or bus, including terminals.

(b) Railroads, inluding terminals.

(c) Shipping.

3. Plants engaged in producing chemicals by chemical processing of raw materials.
4. Coke converting.
5. Educational intitutions (including vocational training).
6. Plants engaged in manufacturing explosives.
7. Plants engaged in manufacturing farm machinery and equipment.
8. Plants engaged in milling, refining, preserving, refrigerating, wholesaling, or storing of food for human consumption or livestock feed.
9. Plants engaged in the production of equipment used in highway maintenance.
10. Hospital clinics and sanatoriums.
11. Plants engaged in the production of lumber (including planning, drying, storing, and treating of lumber), cooperage, plywood, and millwork.
12. Plants engaged in the production of metals and alloys.
13. Mines and quarries.
14. Newspapers.
15. Plants and equipment used in petroleum production, refining and transportation.
16. Commercial broadcasting and communication (not including home receiving sets).
17. Research laboratories.
18. Plants engaged in the production of rubber and rubber products including reclaimed and synthetic rubber.
19. Shipyards and Ship Repair Yards.
20. Telephone and telegraph communication.

◆

A-9 Rating on Steel Deliveries Granted Warehouses

STEEL warehouses, which constitute the normal source of supply for small civilian orders of steel and are also important cogs in the defense machinery, on September 4 were given the benefit of priority treatment in obtaining stocks of steel for resale in an order signed by Priorities Director Nelson.

A quota is to be established for each warehouse buying steel directly from a producer. When this has been done, a preference rating of A-9 will be assigned to deliveries of steel within the quota.

All steel warehouses were asked to file with the Priorities Division before September 15 a report on form PD-83-a, setting forth deliveries made during the first quarter of 1941 of steel from stocks owned and on consignment. Copies of this reporting form are being mailed to approximately 3,000 warehouses.

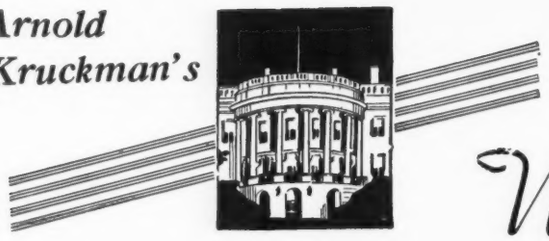
Director to Determine Delivery Quotas

From these reports, the Director of Priorities will determine what percentage of first-quarter sales should be set as the quota for delivery to the warehouse during the last quarter of 1941. On or before October 5, he will notify each warehouse what its quota is to be. Quotas established for the last quarter of this year will remain in effect for each subsequent quarter until further notice.

The order permits until October 5 deliveries to a warehouse of all types of steel under the A-9 rating to the extent of one-third of its receipts from mills of

(*Continued on page* 108)

Arnold Kruckman's



Washington Letter

The Sub-Contracting Situation

ALWAYS bear in mind that all plans in Washington are made piecemeal. We make the plan to fit the condition that is most immediately upon us. The foundation of all plans, in the large, is political. That is why you can perceive a broad general purpose in the whole pattern over the drift of years, yet you can never depend upon what may happen.

Controlled Economy Wanted By Some

We know, for instance, that almost every controlling element in this Government frankly wants to make a socialized form of national economy, a controlled economy, and we know the same elements regard the War as an ideal opportunity to bring about the results they sincerely feel inevitably must be secured in order that our life, our business, our Government, may be modernized. These folks honestly believe in the Democracy that was founded 165 years ago upon individual liberty in private life and business life, IF this Democracy can be modified to fit the needs of the masses, the masses who must live in vast tight bulks in great cities and areas. In other words, our dominant political influences today believe that some superior leaders must plan the broadest outlines of our existence in order to give these masses security.

It is absolutely necessary to grasp this idea to have the key to what has happened and what may happen. It is the key to business you have *not* received from Defense jobs, and it is the key to the raw materials and orders you will undoubtedly again immediately receive for non-defense jobs. But always remember all plans and all prospects literally do depend upon Mr. Roosevelt. He holds and will continue to hold the power of final ultimate decision in all matters to an extent of small detail that would amaze you if you could really understand the minute character of the detail with which he burdens himself.

Small Business to Be Kept Alive

The best news of the moment is the conclusion among controlling officials that your industry must be given raw materials and processed materials to continue to do some non-defense work. There was a hope abroad here that the 185,000 manufacturers of the United States could be forced to do defense work, or the absolutely essential civilian work that would service defense, and the rest would either be obliged to combine with others in pools or corporations, or would be eliminated.

But apparently the most ultra-socialization leaders have come to the reluctant conclusion the country is not quite ripe for these sweeping reforms. The more modest business unit will therefore be given a limited amount of raw materials and supplies to stay alive by making non-defense products. The metal working people, for instance, may not be able to manufacture ash trays for advertising novelties, but they will, however, be able to make steel cabinets and furnaces and such things we really must use in the modern home and office and industrial plant. The word that this is a fact comes from Priorities Director Donald Nelson and from Subcontracting Chief Floyd Odlum.

Many Shops Can't Do Defense Work

The practical people in the Defense agencies have convinced the politicians that smaller concerns generally are not able to take on the defense subcontracts to handle the particular jobs available. Many do not have machines heavy enough to handle the work. The politicians and academicians are convinced now that no individual shop has the perfect machine-tool balance capable of handling whatever comes along. They realize (for the first time) that the smaller shops are equipped to handle custom jobs, rather than mass production. Men like Paul Gearhart of the Contract Distributing Division have demonstrated that the smaller shop naturally will handle six to ten machine operations for a particular job on a single machine, changing the machine over for each separate operation. He made it clear that the prime contractor is perfectly honest in his preference when he farms out his work to larger concerns which have the needed machinery for mass production.

Too Many Sheet Metal Fabricators

The people in the Defense agencies who know say the whole metal fabrication picture shows there are many more people and machines available in the smaller shops than can possibly be used in defense work. They point out that for defense purposes—mind you, for defense purposes—stamping and light sheet metal work facilities, are a drug on the market. They are very frank in admitting that it is almost needless for industrialists of this type to seek defense jobs. That is why they have championed the proposal that these metal manufacturers should be supplied with *some* materials to continue the non-defense jobs.

In all likelihood if Mr. Roosevelt had left the Defense Contract Service to its own plans, you would be getting materials now. They were all organized to launch their program. They had finally won over those who could make it work and who could help to supply the materials. But just as they were about to throw their machinery into full gear, characteristically, Mr. Roosevelt reorganized them. He introduced Mr. Odlum and his ideas into the picture. Mr. Odlum is now again reorganizing the organization,

(*Continued on page* 98)

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

SECTION

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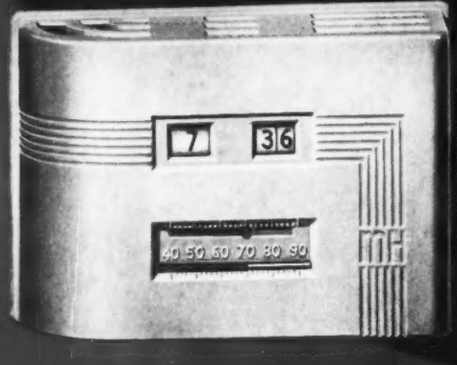
there's a Difference!

HEAT ACCELERATION IS NOT HEAT ANTICIPATION

ONLY Minneapolis-Honeywell Acratherm, Chronotherm and Da-Nite Acratherm have "Heat Acceleration"—a revolutionary development of the exclusive M-H "Series 10" circuit.

M-H "heat accelerated" thermostats start the burner in the usual way. As soon as a definite rise in room temperature has taken place, but not until then, the "accelerator" speeds up the action of thermostat. The result is short, frequent burner operations in mild weather when heat loss is small, and longer burner operations in cold weather—all automatically governed to meet existing conditions. Thus M-H "heat accelerated" thermostats maintain the desired room temperature under all weather conditions and provide distribution of heat to all parts of the building. They avoid wasteful overheating and conserve fuel for defense.

Recommend and install Minneapolis-Honeywell thermostats with the proved principle of "HEAT ACCELERATION." Your customers will readily appreciate the difference. Minneapolis-Honeywell Regulator Company, 2728 Fourth Avenue South, Minneapolis, Minnesota. Branch and distributing offices in all principal cities.



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FOR DEFENSE AND TRIPLE YOUR THERMOSTAT PROFIT
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Dependable Controls Cost Less Than Service

MINNEAPOLIS-HONEYWELL
CONTROL *Systems*

Repair, Replace, Recondition—

To Meet Defense Problems

The heating contractor must be prepared to face drastic changes in the operation of his business. It is possible that a large consumer demand for new furnaces may go unsatisfied for a time as a result of limitations of materials, and that repairing, replacement and reconditioning may constitute a substantial part of our business. This is the time to make sure that existing heating plants are in good working condition and are operating efficiently. This second article in the series deals with combustion corrections to obtain higher efficiencies.

Wringing The Last Squeak From The Btu

By S. Konzo

Special Research Associate Professor
Engineering Experiment Station, University of Illinois

ONE of those moss-covered tales that serve to brighten the otherwise somber existence of fuel dealers comes to mind whenever the subject of getting the most out of a B.t.u. is mentioned. A new, enthusiastic, but refreshingly ignorant coal dealer was undergoing an intensive examination by a serious minded church board. The chairman of the coal purchasing committee was conducting the quiz and started off with:

> "Now Mr. Smith, our board is very much interested in your bid to supply 50 tons of coal for the coming winter at $6 per ton. If you don't mind we'd like to ask you a few questions.

The coal dealer bobbed his head vigorously and said, "Sure, sure, go ahead."

> Board: "Now to start with what is the ash content of your coal?"
> Dealer: "Oh, yes, yes, we've got some ash."
> Board: "What about moisture?"
> Dealer: "We've got some moisture, too."
> Board: "And volatile matter?"
> Dealer: "Oh we've got lots of that, plenty of it in fact."
> Board: "But what about the B.t.u.?"
> The dealer reddened, sputtered a bit, and vigorously pounded the table for emphasis: "Gentlemen, we've got ash. We've got moisture. We've got volatile matter in our coal. But I can assure you over a stack of Bibles that we don't have a single damn B.t.u. in our coal."

Conscientious church boards, economically minded home owners, and heating contractors have one interest in common, and that is to make the heating plant operate efficiently. Ordinarily only the most flagrant examples of excessive fuel consumption are brought to the attention of the heating contractor. There are many, many more installations in which proper adjustments of the fuel burning equipment will improve conditions materially which are not brought to the attention of the contractor, *unless he decides to find out himself.*

Extensive surveys of existing plants which have been made by Professor Larson of the University of Wisconsin and by the fuel research staff of Battelle Memorial Institute have shown that few fuel burning installations in homes are properly "tuned." Automobile owners accept with-

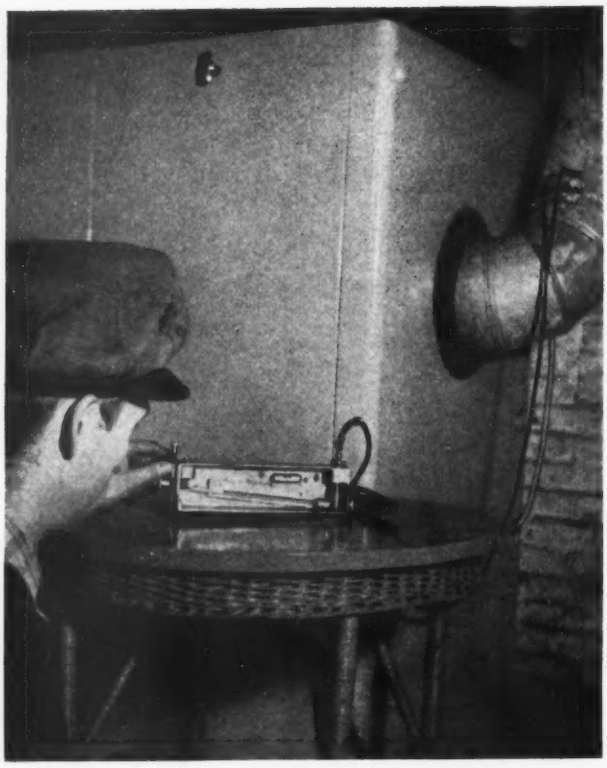

Fig. 1—Taking a draft reading to determine the chimney's draft. There are numerous types of gages. Photo by John E. Peterson, Hinsdale, Ill.

out question the value of periodically "tuning" a car. The home owner has not been aware of the fact that fuel burning equipment also needs periodic "tuning," for the simple reason that *nobody has told him* that such tuning may correct simple faults that are causing uneconomical operation.

The two types of fuel burning equipment that deserve special consideration are conversion oil burner installations and conversion gas burner installations. This discussion will assume that a heating contractor is called upon to inspect a conversion oil burner installation, although the remarks apply equally well to other fuel burning equipment.

What Can the Home Owner Tell You?

The following equipment should be included in your repair kit:

1. portable draft gage
2. flue gas thermometer
3. porcelain rod (bath towel rack)
4. CO_2 indicating meter
5. A table showing flue gas losses. See tables 1 to 4.
6. Spare nozzles for gun type oil burners
7. Furnace cement
8. Flashlight
9. Measuring rule
10. Metal mirror attached to a handle for insertion into the combustion chamber.

Find out, if possible, from the occupant, the answers to the following questions, which may assist you in your inspection.

1. How old is the house?
2. How long has the tenant lived in the house?
3. When was the burner installed and by whom?
4. What fuel was used prior to the installation of the burner and how much fuel was consumed per season?
5. Were any changes made in the location of the furnace or the type of furnace since the burner was installed?
6. Have any changes been made in the house since the burner was installed? Did these changes consist in adding storm sash, adding insulation, adding weatherstripping, caulking of frames, or additions to the house?
7. How much fuel per season has been burned on an average?
8. What fuel was used and where was it obtained?
9. Has any other contractor inspected the plant? When? What did he do, and did it help any?
10. What is the specific complaint if there is any?
11. Is the plant shut off at night?
12. Is the temperature control satisfactory?

What Can the Contractor See?

The room thermostat should be set at the upper range and the main electrical switch to the burner should be turned off so that the burner can be operated manually during inspection. Inspect the furnace installation carefully.

1. Examine the smokepipe to see whether an automatic draft regulating damper has been installed. Does it operate freely? Does it require oil in the bearings?
2. Look inside the smokepipe and into the

TABLE 1

Total Loss in Flue Gas in Per Cent for Oil Fuel
(Combustion is assumed as being complete)

Flue Gas Temperature Deg. F.	Per Cent CO_2 in Flue Gas									
	4	5	6	7	8	9	10	11	12	13
300	22.3	19.2	17.2	15.7	14.7	13.9	13.2	12.7	12.2	11.8
400	29.1	24.8	22.0	19.8	18.3	17.1	16.1	15.4	14.8	14.2
500	36.0	30.4	26.7	24.0	22.0	20.4	19.1	18.1	17.3	16.6
600	42.9	36.2	31.5	28.1	25.7	23.7	22.1	20.9	19.8	19.0
700	50.2	42.1	36.6	32.4	29.5	27.2	25.3	23.8	22.5	21.5
800	57.6	48.0	41.5	36.8	33.2	30.6	28.4	26.6	25.1	23.9
900	65.2	54.1	46.3	41.0	37.2	34.1	31.6	29.5	27.8	26.4
1000	72.5	60.3	51.4	45.3	41.1	37.8	34.9	32.5	30.7	29.1

Example: Given 8% CO_2 and 900° F. temperature.
Total loss in flue gas = 37.2% of fuel fired.
Note: Maximum percentage of CO_2 for condition of zero excess air is 15.25%.

cleanout door of the chimney. Is there much accumulation of soot? If soot is found in quantities the probability is great that the heating surfaces may also be coated. Soot burning chemicals are usually used to burn off the accumulation.

3. Clean off the inside of the glass inspection door so that the flame can be observed. Turn on the burner. How long does it take for the oil to ignite? If this period is more than a few seconds, it may indicate a poor spark or a dirty nozzle. The time of ignition should be checked with manufacturer's instructions, since some burners such as the low pressure atomizing burner require a few seconds more than the conventional high pressure burner.
4. How long does the electrical ignition operate? Check with manufacturer's instructions. If this period is too long it may be due to a faulty flame, improper ignition, or a sluggish stack limit switch. Make no adjustments now, but wait until the preliminary inspection is completed.
5. Does the burning take place without pulsation or vibration? If pulsation occurs at the start, does it stop when the ignition is cut off? Pulsation problems have caused many headaches to burner manufacturers and their origin and prevention have led to much speculation. Space does not permit us to discuss the numerous theories offered as to causes of pulsations. The trouble shooter should understand that in general the tighter the furnace, the greater the tendency toward pulsation.

   In most cases, if a small breather hole is placed in the combustion chamber, the pulsations may be eliminated. This remedy may consist in propping open the inspection door by a very small amount, no more than $\frac{1}{16}$-inch in most cases. If this does not alleviate the situation, a long series of trials may be necessary, consisting of such experiments as: cleaning the ignition electrodes, reducing the oil rate, trying nozzles having different spray angles, changing the air rate to the burner, increasing the draft, and in some cases of changing the entire burner.
6. Observe the fire. Does the flame look white? If so, it is a sign of too much air and the obvious remedy is to reduce the air input. Is the flame a smoky orange? If so, the air is insufficient. Manufacturers recommend a flame that is just verging on a hazy atmosphere, but one in which there is no evidence of smokiness at the tip of the flames.

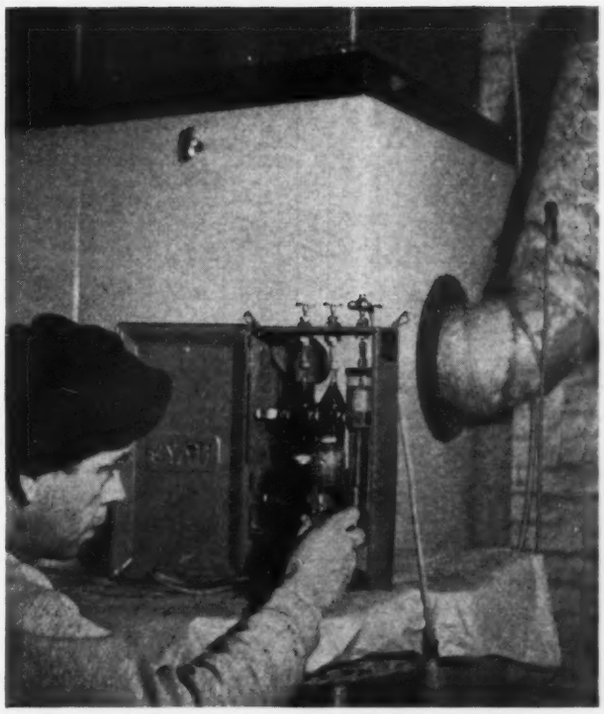

Fig. 2—CO_2 reading is taken in the smoke pipe between furnace and automatic draft adjuster. There are several simpler types of direct reading analysers. Photo by John E. Peterson, Hinsdale, Ill.

Mr. J. S. Cunningham passes on a good, quick method for determining whether a flame is clean. A porcelain rod, such as that used in bathroom towel rods, is inserted in the smokepipe for at least 15 minutes. If the rod is sooty, as can be determined by wiping it with a clean rag, the fire can stand more air. In this connection, it should be realized that it is better to have a slightly lower CO_2 content in the flue gases if a clean fire can be maintained than to have a slightly sooty flame accompanied by a higher CO_2 content.

In connection with flame adjustments the following quotation from a manufacturer's catalogue applies to a gas flame. "Individually adjust the flame on each main burner. In final adjustment, the flame should be soft and with just sufficient primary air to avoid a luminous yellow tip. It should have a well-defined inner cone, and its base

TABLE 2

Total Loss in Flue Gas in Per Cent for Natural Gas
(Combustion is assumed as being complete)

Flue Gas Temperature Deg. F.	Per Cent CO_2 in Flue Gas							
	4	5	6	7	8	9	10	11
300	22.1	19.9	18.4	17.4	16.6	16.0	15.5	15.1
400	27.4	24.2	22.1	20.6	19.5	18.6	17.9	17.3
500	32.7	28.5	25.8	23.8	22.4	21.2	20.2	19.5
600	38.0	32.9	29.5	27.1	25.3	23.8	22.7	21.8
700	43.4	37.5	33.3	30.5	28.3	26.5	25.2	24.1
800	49.0	42.1	37.1	33.8	31.2	29.2	27.7	26.4
900	54.7	46.7	41.0	37.3	34.3	32.1	30.3	28.7
1000	60.7	51.3	45.0	40.9	37.5	34.9	32.9	31.2

Note: Maximum percentage of CO_2 for condition of zero excess air is 13.01%.

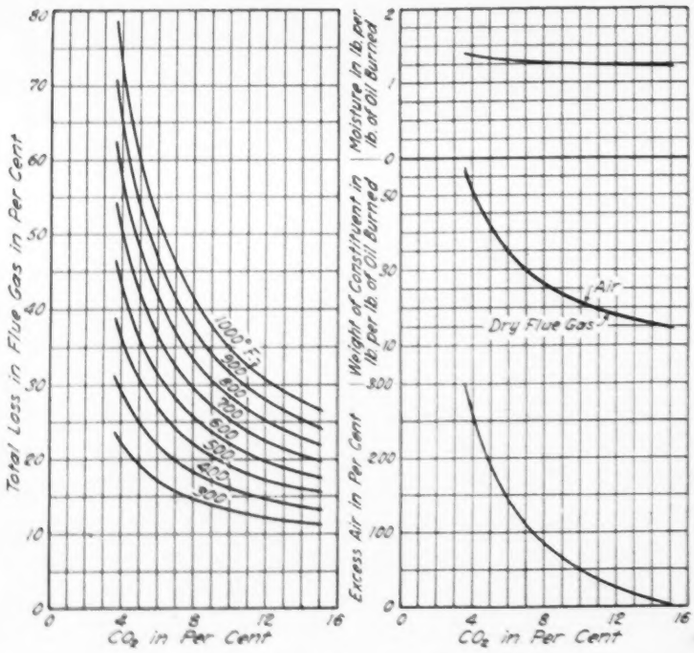

Fig. 3—Flue gas loss for oil. Reproduced from University of Illinois, Engineering Experiment Station, Bulletin 318.

TABLE 3

Total Loss in Flue Gas in Per Cent for Anthracite
(Combustion is assumed as being complete)

Flue Gas Temperature Deg. F.	Per Cent CO_2 in Flue Gas										
	5	6	7	8	9	10	11	12	13	14	15
300	19.8	17.0	15.0	13.6	12.3	11.3	10.4	9.8	9.3	8.8	8.4
400	27.3	23.3	20.6	18.5	16.7	15.3	14.1	13.2	12.4	11.7	11.2
500	35.1	29.8	26.1	23.3	21.0	19.2	17.8	16.6	15.6	14.7	14.0
600	42.9	36.4	31.7	28.2	25.4	23.2	21.5	20.0	18.7	17.6	16.7
700	50.8	43.0	37.5	33.3	29.9	27.3	25.2	23.4	21.9	20.7	19.5
800	58.9	49.7	43.3	38.5	34.6	31.5	28.9	26.9	25.1	23.7	22.3
900	66.9	56.5	49.0	43.7	39.4	35.7	32.9	30.5	28.5	26.8	25.3
1000	74.9	63.6	55.4	49.2	44.1	40.0	36.8	34.2	31.9	30.0	28.3

Note: Maximum percentage of CO_2 for condition of zero excess air is 19.35%.

TABLE 4

Total Loss in Flue Gas in Per Cent for High Volatile, Bituminous B Coal
(Combustion is assumed as being complete, that is with no carbon monoxide or free hydrogen in flue gas)

Flue Gas Temperature Deg. F.	Per Cent CO_2 in Flue Gas										
	5	6	7	8	9	10	11	12	13	14	15
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500	34.5	29.8	26.4	23.9	21.8	20.1	18.9	17.8	16.8	16.0	15.3
600	41.8	35.8	31.7	28.6	26.0	23.8	22.3	21.0	19.8	18.8	17.9
700	49.1	42.0	37.0	33.3	30.2	27.6	25.8	24.2	22.8	21.7	20.6
800	56.4	48.1	42.3	37.9	34.4	31.5	29.3	27.4	25.8	24.5	23.3
900	63.9	54.3	47.7	42.7	38.8	35.4	32.9	30.7	28.9	27.4	26.0
1000	71.7	61.0	53.3	47.6	43.1	39.6	36.6	34.2	32.2	30.3	28.8

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7. Is the shape of the flame evenly rounded or is there more fire on one side of the firepot than the other? Do the flames touch any cold heating surfaces? Do the flames fill the refractory chamber or does the chamber appear to be greatly oversized? Different nozzles may have to be tried or modifications made in the refractory chamber. Some manufacturers recommend the use of a brick ledge across the top of the refractory chamber so that the flames are forced to "curl" back towards the burner before leaving the refractory chamber.

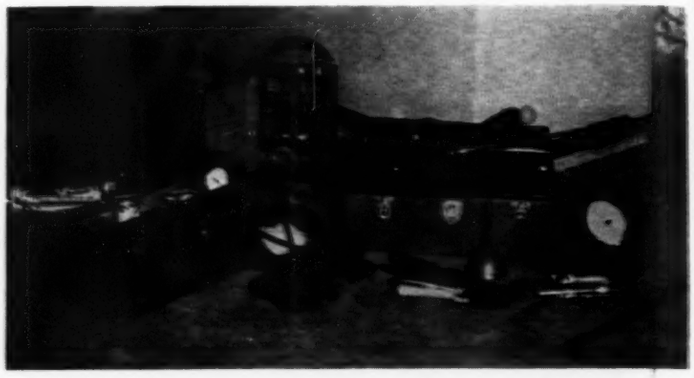

Fig. 4—Instruments used by J. E. Peterson, Home Heating Company, Hinsdale, Ill. Kit also contains tools for adjustment of control instruments and minor repairs. Author Konzo suggests a similar kit for every serious contractor.

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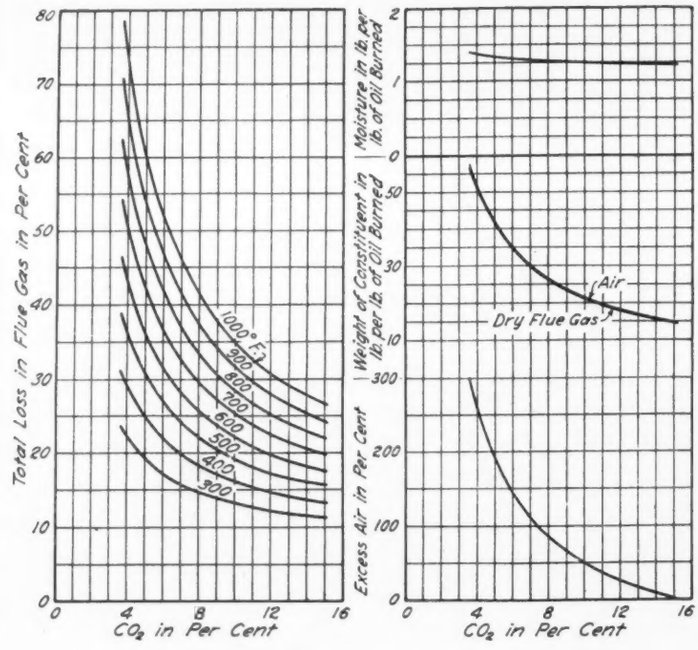

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600	42.9	36.4	31.7	28.2	25.4	23.2	21.5	20.0	18.7	17.6	16.7
700	50.8	43.0	37.5	33.3	29.9	27.3	25.2	23.4	21.9	20.7	19.5
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500	34 5	29.8	26.4	23.9	21.8	20.1	18.9	17.8	16.8	16.0	15.3
600	41.8	35.8	31.7	28.6	26.0	23.8	22.3	21.0	19.8	18.8	17.9
700	49.1	42.0	37.0	33.3	30.2	27.6	25.8	24.2	22.8	21.7	20.6
800	56.4	48.1	42.3	37.9	34.4	31.5	29.3	27.4	25.8	24.5	23.3
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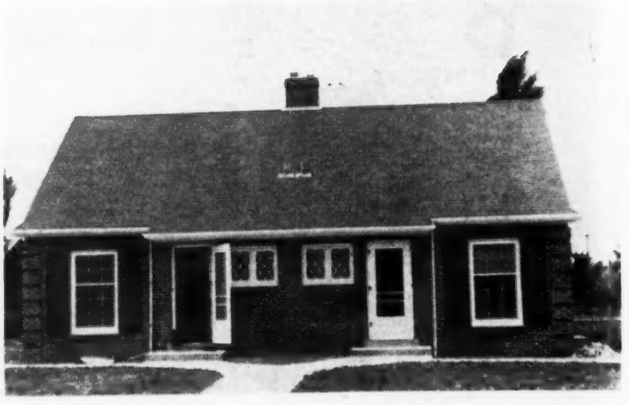


A few of the duplex houses and (right) closeup of one building showing duplication of plan for both apartments. There is one heated bedroom upstairs in each apartment.

"Economized" Gravity System in a Duplex

[Defense House Heating]

LAKE CONSTRUCTION CORP., operating in Munster, Indiana, to provide economical housing for industry workers has developed a type of two-family, brick veneer, gravity warm air heated house which the local FHA insuring office thinks well of. The house design, the plan and the general characteristics show in the exterior house photograph. A fire wall divides the two apartments.

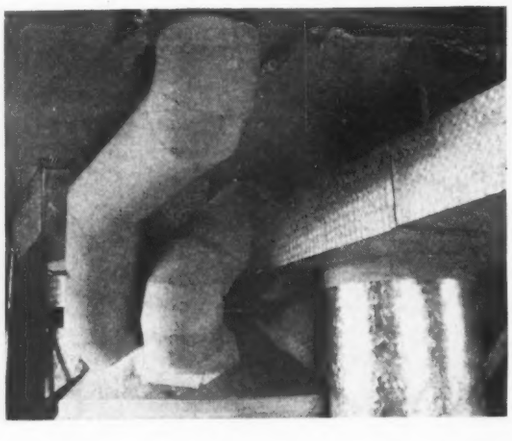
The heating system used was planned by the builder, the Chicago office of International Heater Co. and Hammond Furnace Supply Co., Hammond, the heating contractor.

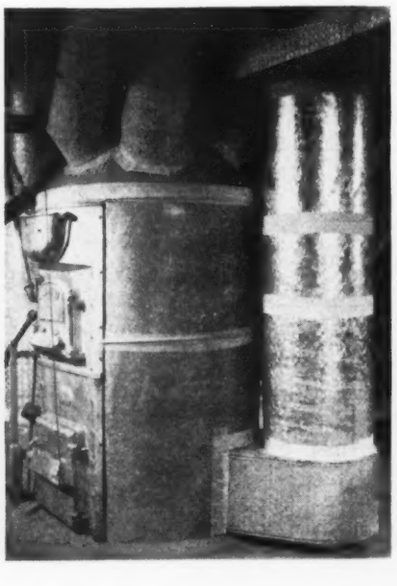
These houses have basements; each unit has its own furnace so that each owner may have the heat he wants, when he wants it.

There is nothing unusual in the heating system unless it is the simplicity; but a number of corners were cut to keep the price of the heating plant in line with the economies practiced throughout the building.

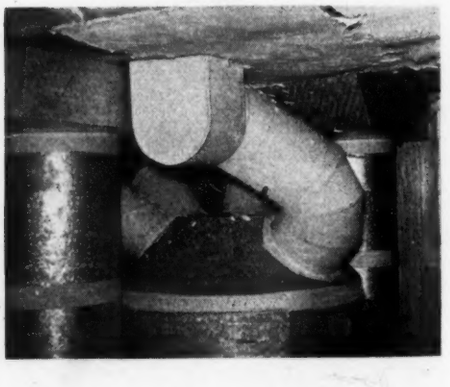
Most of these economies are indicated in the photographs. The four warm air pipes are cut out of the sloping bonnet and twisted as directly

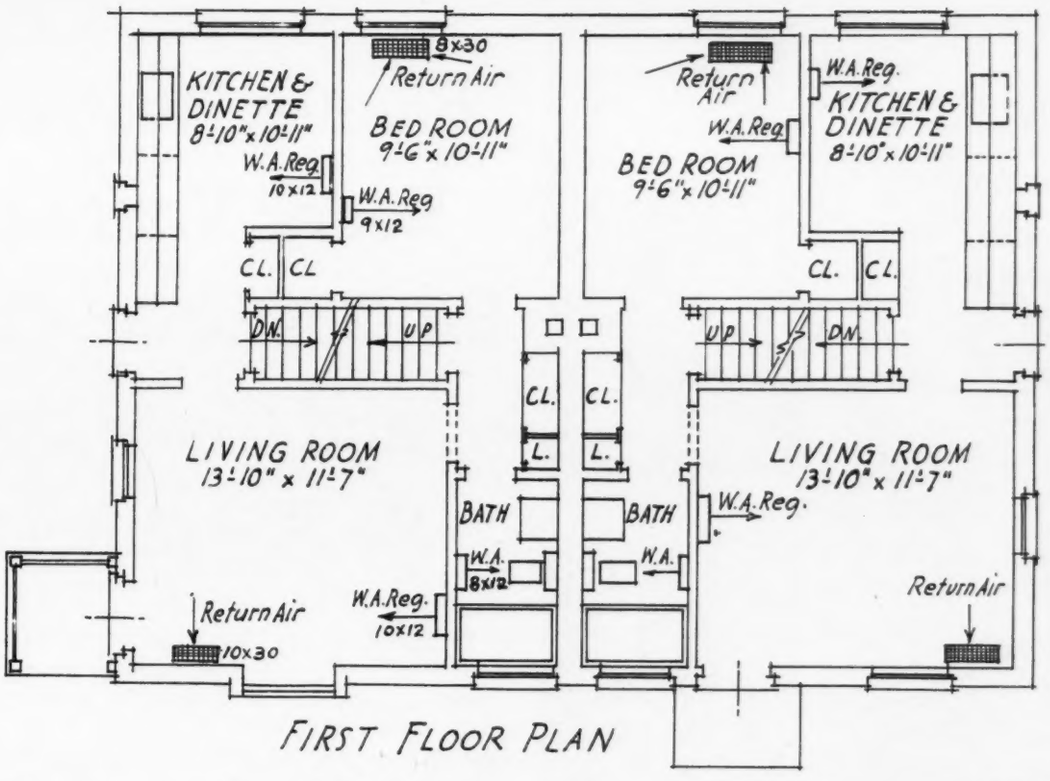
Below and center—Warm air pipes were twisted as directly as possible from bonnet to register, sometimes sacrificing pleasing appearance. Note, also, "economized" return air piping.





Right—This type of unit register box and boot was used to reduce the number of fittings and because the box lent itself readily to the "economized" piping arrangement. Note plaster-on-metal-lath heat screen.





FIRST FLOOR PLAN

as possible to the register box. Extra neat spacing or long radius flow off pipes around the bonnet were sacrificed in favor of short leads clearing obstructions.

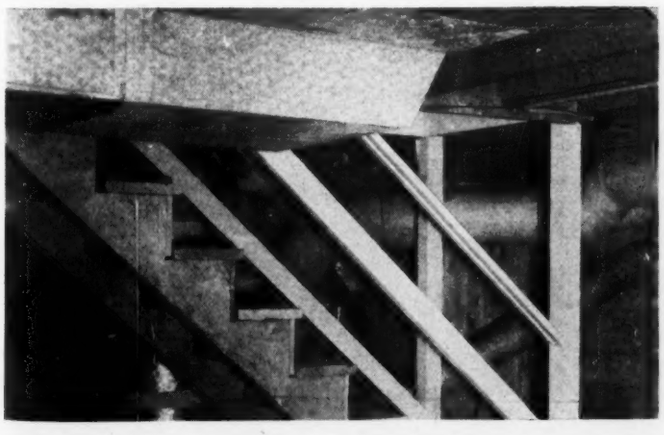
Wherever possible standard fittings were used but on a few pipes a special boot (really a continuation of the register box with the warm air pipe cut in one side and the bottom rounded off in about the contour of the warm air pipe), had to be employed. A closeup photograph shows one of these boots clearly.

In the first house built the cold air run was a complete rectangular duct line below the bottom flange of the center beam. It was found this cut head room near the furnace so floor joists were spaced differently on all later houses so that the cold air line could be panned joists up to the furnace. Two photographs show the improved construction.

The cold air pipe is run vertically alongside the casing; starting from a collar in the cold air main and ending as a flat topped shoe at the floor. This is not streamlined, but is economical and in such a small house and with ample cold air area probably works as well as a more elaborate system. There are only two cold air grilles—one in the living room; the other in the bed room as shown on the plan. The plainest steel cold air face was used.

Warm air register locations are shown on the plan. A type of plain stamped face in sizes shown on the plan was used throughout.

The furnace pictures show the plaster on metal lath fire shield used above the bonnet, in accordance with FHA regulations. Each warm air pipe has a manual damper and the furnace is regulated with a chain and pulley set operating the check and damper.



Return air from outside walls (see plan above) was carried through panned joist spaces (right photo) to a line with the furnace and then became a full metal duct across beams. The return is thus kept above the main structural beam up to the furnace.

Banner Heating Co. Keeps Volume Up by Customer Contact and Costs Down By Simplification

One of the largest operators in number of furnaces sold each year is Banner Heating Company, operated by R. W. Mitchell, and C. J. McCrudden.

Banner used to shoot at the new house market, but the owners did not kid themselves on costs and profits and they had the courage to get out of the market when their books showed constant losses. Having decided that old house work offered the best chances for profit, Banner executives set about finding ways and means of building up volume; keeping costs low; and maintaining a respectable profit.

Keeping up—even increasing—volume now is assured by three outside salesmen who devote all their time to finding owners whose furnace needs repair, replacement, reconditioning and convinc-

COMPETITION for heating contracts is keen in Youngstown, Ohio—with probably sixty firms of all sizes and types bidding on new house work and canvassing old house prospects. New house construction in Youngstown has not boomed until recently and in the last few years has been spotty—some years good; others poor.

Small Shops Set New House Prices

Conditions in the new house field have been further complicated by a union agreement under which the small shop owner who works with the tools can carry a card and is thereby entitled to bid on and do new house heating. There are many of these small shops in Youngstown. Some of these small shops have a legitimately low overhead—some others, unfortunately, only think their overhead is low, but the net result in either case is that new house work goes pretty cheap to the builder who takes the time to do a little "shopping."

◆

Above—Typical Banner Heating Co. installation showing standardized branch take-off elbows and straight duct (spot welded). This furnace is in the Banner office and warehouse and is used for display. Right—Current classified telephone directory advertisement. Note that the firm is also a repair parts jobber. The retail installation department is completely divorced from the jobbing business. Retail buys parts from jobbing—as does any other contractor.

ing these owners that the work should be done immediately. Proper sales price is assured by shop and installation methods described later.

Advertising for Prospects

The firm advertises extensively and consistently in the classified phone book section. Each Sunday, also, a one-column by 2-inch display advertisement is run on the building page. Another advertisement of about the same size appears in the paper in the middle of each week. Banner employs no canvassers, but it does depend heavily on the telephone to find prospects.

This dependence on the telephone is possible because the firm has a list of hundreds of users of its furnaces in and around Youngstown and records show that almost every owner, sooner or later, becomes responsible for three to five new prospects just because Banner believes in giving each customer the best heating system possible and telephoning users for prospects year after year.

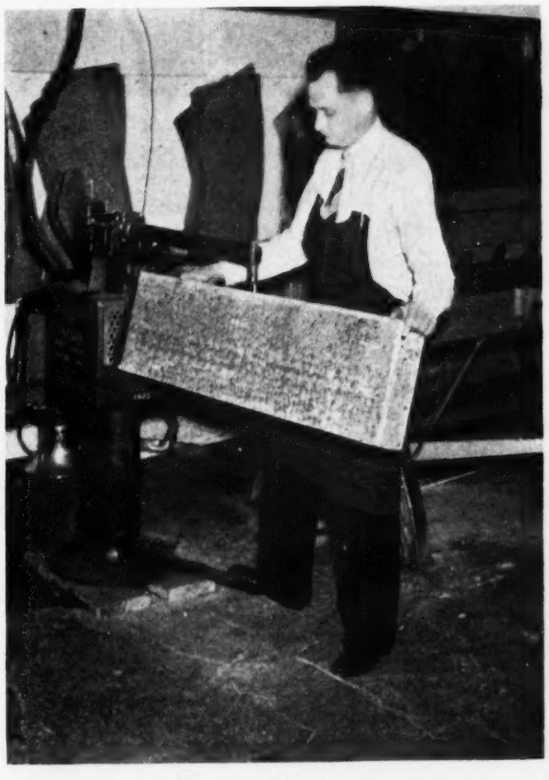
The firm also has a list of several hundred users of conversion gas burners. These prospects are constantly being worked to explain the better results obtained from a gas furnace than from a gas conversion job—particularly when the conversion installation is none too satisfactory.

Youngstown also used to be predominantly coal heated. Now the city has a very favorable gas heating rate so all coal users with old furnaces are prospects for new gas furnaces.

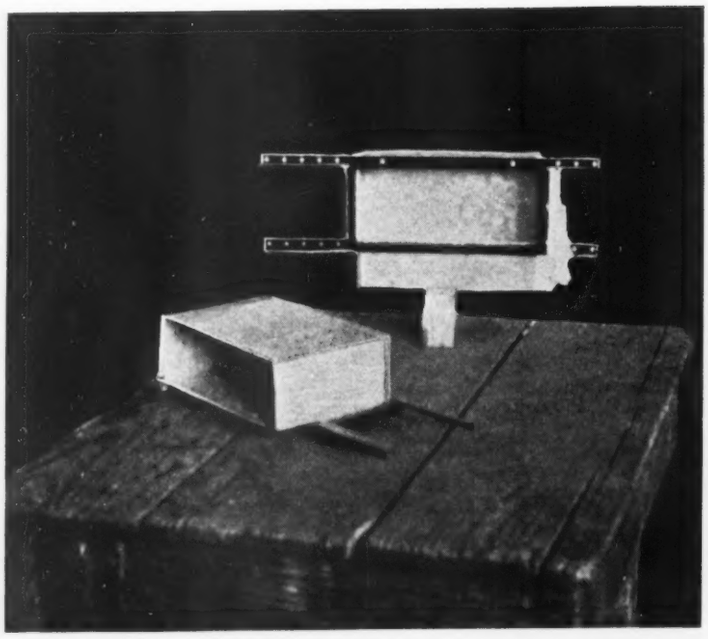
Maintenance Service Plan

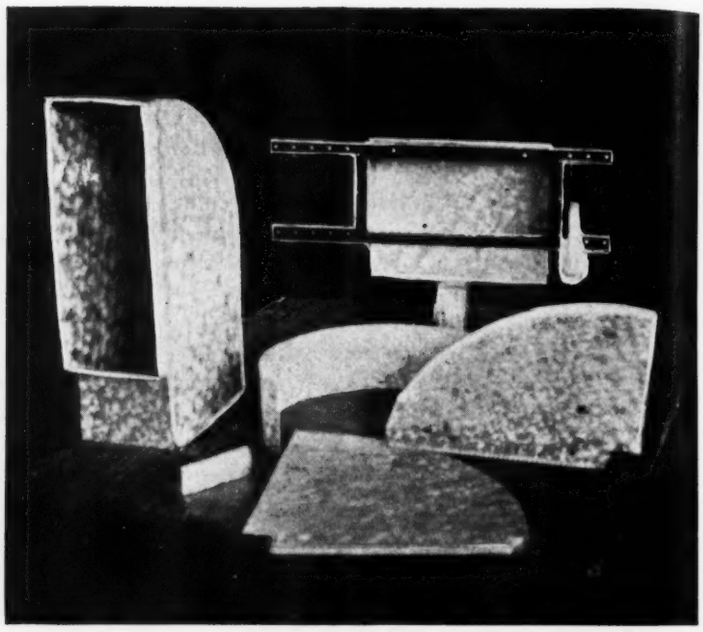
And lastly, Banner has had excellent results from an advertised service which home owners have found convenient and worth while. For a flat fee of six dollars (paid in advance) Banner makes three service calls each year. In the fall, the service men light gas, start the oil burner or light the coal. They oil the blower and install a new set of filters. The owner pays $1.50 for each filter section; labor is included in the service plan. During the middle of the heating season a second call is made at which time the blower is oiled, all controls are checked to see that they are operating and that they are properly set for house requirements, the humidifier is thoroughly cleaned out and started fresh, and dampers throughout the system are checked or adjusted to meet any changed living requirements. In the spring, the third call is made when the fire is stopped, the furnace is cleaned and controls adjusted to operate the blower manually for summer ventilation.

During all the year the service department maintains 24-hour service. Anything which goes wrong is corrected without cost except if parts



At left—Operator is "stitching" a stack or main straight section on the spot welder. Banner prefers spot welding to machine seaming. At right—Operator spot welding two cheek pieces of an elbow to the back strip. Side edges are lapped and the spots are run along this lap. Both stack (4-foot length) and all fittings are made up in quantities for stock.





These retouched photographs are somewhat rough but show (left) stack head with frame for register. Front, back and top and the two sides are lapped and spot welded. The register frame slides into grooves previously formed. Use of a few register sizes make it possible for Banner to stock these frames and boxes. Right—Completed elbow and parts ready for "stitching" on the spot welder. This type of elbow is the takeoff of branch from main. Two such elbows together provide flexibility in getting out of the main.

are needed. In this case the owner pays the retail price for the parts; Banner labor is free under the service plan.

Youngstown home owners like this service and several hundred have bought it.

Simplification of Sheet Metal Work

The problem of keeping costs competitive has been solved by simplification and standardization. When a prospect reaches the buying stage, a survey is made and a plan is drawn from house measurements. From this plan the duct system is selected from standard stock fittings filled in with straight duct sections made for the particular house.

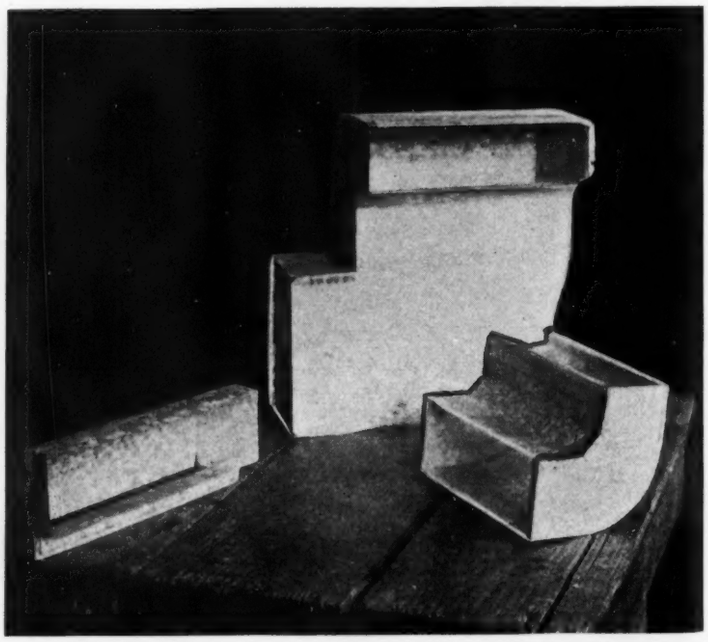
Straight Pipe Spot Welded

It is in the design and fabrication of these stock fittings that Banner has been able to keep costs down. For example all ducts are standardized on a depth of 8 inches. Stacks are fabricated 3½ by 12 inches in four-foot lengths. Four feet was selected because such short pieces make easier the job of getting new stacks in partitions.

While Banner has a lock forming machine and edger, the company prefers to spot weld duct and stack sections as shown in one photograph. The flat sheet is formed into the stack in the brake with a lap along one edge and this lapped edge is then "stitched" in the spot welder. Elbow pieces, as shown in a photograph, are cut and edged and then the two cheeks are spot welded to the outside and inside strips.

Spot Welded Heads and Elbows

Register boxes are made as a single unit as illustrated in a photograph, of two side pieces, one front and one back piece. In order to spot weld, the front and back are cut wide enough for a turned lap which is bent over the side and spot-welded along the lap. Since register sizes used are restricted to a couple of sizes the box is so



At rear—Two stock elbows put together to show how branch is taken off main. In foreground, two types of standard main or branch elbows spot welded from four pieces.

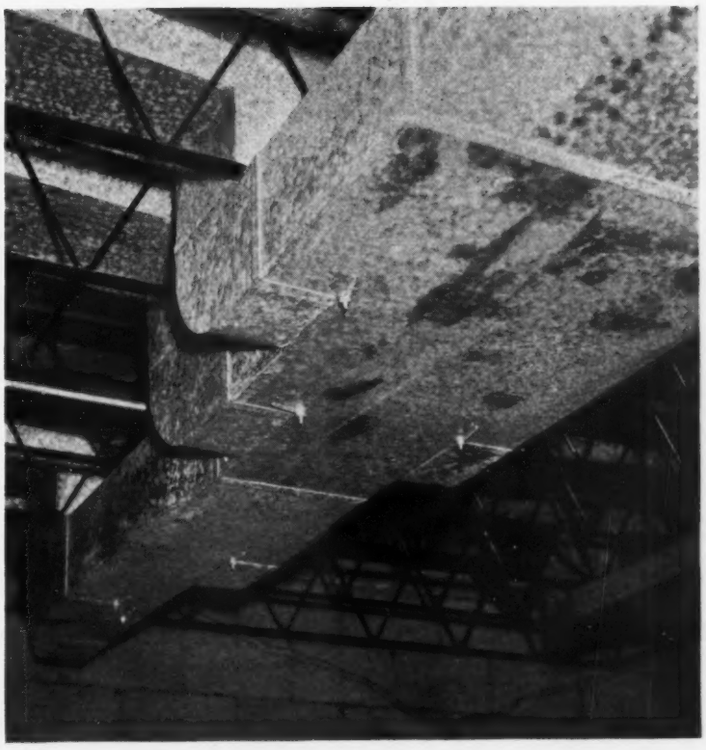
constructed that the register frame can be slipped into a groove at the same time and the complete unit is placed in stock.

Branch pipes are standardized at 5 by 8 inches —the 8-inch dimension corresponding to the standardized main duct depth. The straight branch sections are made like the stacks and in the same 4-foot length. To get a branch out of a main, Banner uses two 90-degree elbows to turn up and to one side. A typical takeoff is shown in the pictures of the furnace and the duct. By making these elbows in the spot welder for stock, one elbow size meets practically every requirement.

Return Line in Unlined Stud Spaces

Standard return line construction employs branches identical with warm air branches. These connect into panned joist spaces. One deviation occurs quite frequently. In Youngstown, it is permissible to use unlined stud space for return air stack. This is usually the low cost job. When this construction is used, a stock Banner register box is placed at the top of the stud space and the stock stack boot at the bottom. It should be said that this stud stack is used only where rigid sheathing or insulation forms the inside and outside stud space cover.

As shown previously and explained in the text, Banner finds spot welding of standardized fittings and duct pieces definitely reduces labor time. This spot welded register box is an example. The bag contains register bolts.



This view of the Banner office heating plant shows typical branch takeoffs from the main using the two standardized elbows. Also the standing and S-drive cleats used to join sections. Banner simplifies by using all 8-inch deep ducts and branches and fittings.

Branches and mains are joined with S-drive cleats across the top and bottom and on both sides. (See photograph of duct).

"Picking Out" a Job

When a job is sold, the shop superintendent requisitions out of stock the heads, boots, elbows, stack, branch pieces required and orders the straight main duct pieces made up. Measurements into which the piping must go are laid out on the shop floor and the pipe work temporarily assembled to see that it will fit. The pipe work is then delivered to the job ready for erection.

Periodic Cost Checks

Every piece made for stock is subjected to periodic cost checks so that a price is assigned to every fitting. Straight sections and special fittings when made up are weighed and sold at an established price per pound. Thus a job can be quickly costed when assembled for delivery and can also be priced during the sale from established unit costs.

Duct Work For Other Dealers

That these methods of making duct work are satisfactory from a cost and service viewpoint is indicated by the use of Banner duct work by a growing number of Youngstown furnace installers who find they can buy cheaper from Banner than their own shop costs.

Types of Heating Systems Used in PBA Projects

NEARLY 30,000 new heating plants will be in operation by mid-winter in as many new homes occupied by Army and Navy enlisted personnel and industrial workers for national defense, reports Federal Works Agency, Public Buildings Administration.

Assigned to Public Buildings Administration for construction by the Federal Works Administrator, as of August 1, were 145 defense housing projects scattered across the country from Maine to California, as well as Hawaii and Puerto Rico. These projects will, when completed, offer a total of 32,210 new homes for families of defense workers. Heating systems are specified in all projects with the exception of twelve in Hawaii, Puerto Rico, and southern Florida.

Purchased from several different manufacturers on a mass purchasing plan, have been 9,970 floor furnaces, 16,486 forced warm-air furnaces, and 3,460 circulating heaters. For these heating plants, Procurement Division of the Treasury Department has spent approximately $1,500,000.00.

On all of the projects PBA engineers made a complete analysis of the heating needs, resulting in the choice of equipment and fuel used. Each analysis was based on the type of construction and the insulation used; the length of the heating season; the high, low, and average temperatures; availability, and cost of coal, gas, and oil. In addition to this, amatorization of the equipment was also considered.

As a result of the analyses PBA engineers have indicated that coal will be used for heating 13,696 defense homes, gas in 13,165, and oil in 3,055. A total of 2,272 of the new homes in the tropical climates will not be heated.

A table of the PBA defense housing projects showing the type of heating equipment and fuel used is shown following.

F. F. = Floor Furnace. F. W. A. = Forced Warm Air. C. H. = Circulating Heaters

Project Name	Number of Heating Units	Project Location	Type Heating Equipment			Fuel		
			F.F.	F.W.A.	C.H.	Coal	Gas	Oil
Fort Huachuca	30	Fort Huachuca, Ariz.			x		x	
Municipal Airport	135	Tucson, Ariz.	x				x	
Shipyard Workers	500	Mobile, Ala.	x				x	
Benicia Arsenal	50	Benicia, Cal.	x				x	
Municipal Airport	150	Fresno, Cal.	x				x	
Fort Ord	264	Fort Ord, Cal.	x				x	
Fort Ord	286	Fort Ord, Cal.	x				x	
Camp Haan	125	Riverside, Cal.			x		x	
March Field	150	Riverside, Cal.	x				x	
Airplane Workers	3,000	San Diego, Cal.	x				x	
Airplane Workers	500	San Diego, Cal.	x				x	
Downtown Site	68	San Diego, Cal.	x				x	
Army Posts	75	San Francisco, Cal.	x				x	
Camp Roberts	150	Paso Robles, Cal.			x		x	
Hamilton Field	175	San Rafael, Cal.	x				x	
Munipail Airport	100	Stockton, Cal.	x				x	
Moffett Field	150	Sunnyvale, Cal.	x				x	
Navy	858	Mare Island, Cal.	x				x	
Fort Logan	50	Denver, Col.		x		x		
Lowry Field	125	Lowry Field, Col.		x		x		
Electric Boat Sub. Base	300	New London, Conn.		x		x		
Industrial Workers	300	Waterbury, Conn.		x				x
Fort Dupont	20	DelawareCity, Del.		x				x
Municipal Airport	100	Orlando, Fla.			x		x	
Gunnery Flying School	150	Panama City, Fla.			x			x

F. F. = Floor Furnace. F. W. A. = Forced Warm Air. C. H. = Circulating Heaters

Project Name	Number of Heating Units	Project Location	Type Heating Equipment			Fuel		
			F.F.	F.W.A.	C.H.	Coal	Gas	Oil
Municipal Airport	100	Tallahassee, Fla.			x		x	
MacDill Field	300	Tampa, Fla.		No Heat				
Elgin Field	100	Valparaiso, Fla.			x			x
Elgin Field	100	Valparaiso, Fla.			x			x
Municipal Airport	150	W. Palm Beach, Fla.		No Heat				
Municipal Airport	75	Augusta, Fla.			x			x
Fort Benning	350	Columbus, Ga.			x			x
Camp Stewart	100	Hinesville, Ga.			x			x
Fort Oglethorpe	50	Rossville, Ga.			x	x		
Municipal Airport	250	Savannah, Ga.			x			x
Municipal Airport	100	Boise, Idaho		x		x		
Scott Field	100	Belleville, Ill.		x		x		
Chanute Field	200	Rantoul, Ill.		x		x		
Chanute Field	100	Rantoul, Ill.		x		x		
Camp Grant	80	Rockford, Ill.		x		x		
Proving Ground	200	Savanna, Ill.		x		x		
Industrial Workers	75	Charlestown, Ind.		x		x		
Industrial Workers	300	Connorsville, Ind.		x		x		
Industrial Workers	75	Jeffersonville, Ind.		x		x		
Ordnance Workers	200	Kingsbury, Ind.		x		x		
Industrial Workers	100	New Albany, Ind.		x		x		
Defense Workers	500	South Bend, Ind.		x		x		
Proving Grounds	100	Versailles, Ind.		x		x		
Ordnance Workers	375	Burlington, Ia.		x		x		
Ordnance Workers	200	Burlington, Ia.		x		x		
Airplane Industry	350	Kansas City, Kan.		x			x	

F. F. = Floor Furnace. F. W. A. = Forced Warm Air. C. H. = Circulating Heaters

Project Name	Number of Heating Units	Project Location	Type Heating Equipment			Fuel		
			F.F.	F.W.A.	C.H.	Coal	Gas	Oil
Fort Riley	125	Junction City, Kan.		x			x	
Fort Riley	40	Fort Riley, Kan.	x	x			x	
Aircraft Plants	400	Wichita, Kan.	x	x			x	
Fort Knox	700	Fort Knox, Ken.		x		x		
Ordnance Workers	162	Louisville, Ken.		x			x	
Ordnance Workers	88	Louisville, Ken.		x			x	
Camp Livingstone Camp Claiborne	255	Alexandria, La.			x		x	
Barksdale Field	139	Bossier City, La.	x				x	
Camp Polk	150	DeRidder, La.	x				x	
Camp. Polk	175	Leesville, La.	x				x	
Municipal Airport	150	Bangor, Maine		x		x		
Defence Industry	200	Bath, Maine		x		x		
Proving Ground	300	Aberdeen, Md.		x		x		
Holabird QM Depot	85	Baltimore, Md.		x		x		
Aircraft Workers	696	Baltimore, Md.		x		x		
Sparrows Point	250	Baltimore, Md.		x		x		
Edgewood Arsenal	200	Edgewood, Md.		x		x		
Medical Center	70	Forest Glen, Md.		x		x		
Proving Ground	500	Havre De G. Md.		x		x		
Navy	650	Indianhead, Md.			x			x
Fort Meade	115	Odenton, Md.		x				x
Westover Field	200	Chicopee, Mass.		x				x
Fort Devens	300	Fort Devens, Mass.		x				x
Fort Custer	250	Battle Creek, Mich.		x		x		
Selfridge Field	130	Mt. Clemens, Mich.		x				x
Industrial Workers	300	Muskegon, Mich.	x	x			x	
Municipal Airport	50	Jackson, Miss.		x			x	
Municipal Airport	100	Meridian, Miss.			x		x	
Ordnance Workers	140	St. Charles, Mo.		x		x		
Fort Leonard Wood	250	Waynesville, Mo.		x		x		
Tannery School	125	Las Vegas, Nev.			x		x	
Navy Yard	800	Portsmouth, N.H.		x				x
Aircraft Workers	250	Caldwell, N. J.		x		x		
Aircraft Workers	200	Clifton, N. J.		x		x		
Fort Dix	100	Fort Dix, N. J.		x		x		
Defense Workers	300	Dover, N. J.		x		x		
Fort Monmouth	265	Long Branch, N.J.		x		x		
Fort Paterson	300	Paterson, N. J.		x		x		
Ordnance Depot	100	Pedricktown, N.J.		x		x		
Industrial Workers	250	Phillipsburg, N.J.		x		x		
Municipal Airport	100	Albuquerque, N.M	x				x	
Industrial Workers	144	Elmira, N. Y.—Site No. 3		x		x		
Industrial Workers	56	Elmira, N. Y.—Site No. 6		x		x		

F. F. = Floor Furnace. F. W. A. = Forced Warm Air. C. H. = Circulating Heaters

Project Name	Number of Heating Units	Project Location	Type Heating Equipment			Fuel		
			F.F.	F.W.A.	C.H.	Coal	Gas	Oil
Fort H. G. Wright	20	Fishers Island, N. Y.	x					x
Industrial Workers	200	Sidney, N. Y.		x		x		
Pine Camp	200	Great Bend, N.Y.		x		x		
Mitchel Field	200	Hempstead, N.Y.		x		x		
Industrial Workers	300	Niagara Falls, N. Y.		x		x		
Fort Bragg	550	Fayetteville, N.C.		x		x		
Workers Defense	300	Canton, O.	x	x			x	
Industrial Workers	300	Massillon, O.		x			x	
Fort Sill	150	Fort Sill, Okla.	x				x	
Army Air Base	85	Pendleton, Ore.		x		x		
Industrial Workers	300	Hatboro, Penn.		x			x	
Barracks	35	Carlisle, Penn.		x		x		
Industrial Workers	300	Chester, Penn.		x			x	
Industrial Workers	100	Corry, Penn.		x			x	
Industrial Workers	250	Delaware County, Penn.–Site No. 1	x		x		x	
Industrial Workers	250	Delaware County, Penn. –Site No. 2	x		x		x	
Industrial Workers	100	Ellwood City, Pa.		x		x		
Industrial Workers	200	Titusville, Penn.	x	x			x	
Industrial Workers	250	Williamsport, Pa.		x		x		
Fort Jackson	350	Columbia, S. C.		x		x		
Fort Meade	35	Fort Meade, S.D.	x				x	
Industrial Workers	10	Arlington, Tex.		x			x	
Fort Bliss	200	El Paso, Tex.	x				x	
Fort Clark	50	Fort Clark, Tex.			x			x
Ellington Field	200	Houston, Tex.	x				x	
Flying School	100	San Angelo, Tex.	x				x	
Brooks & Kelly Fields	300	San Antonio, Tex.	x				x	
Fort Sam Houston	200	San Antonio, Tex.	x				x	
Flying School	100	Victoria, Tex.			x		x	
Mechanics School	175	Wichita Falls, Tex.		x			x	
Army Industrial Estab.	150	Ogden, Utah		x			x	
Arlington Cantonment	35	Arlington, Va.		x		x		
Langley Field	350	Langley Field, Va.		x		x		
Fort Monroe	90	Phoebus, Va.		x		x		
Navy Yard	265	Portsmouth, Va.		x		x		
Navy Yard	400	Portsmouth, Va.		x		x		
Fort Story	50	Virginia Beach, Va.		x		x		
Army Air Base	85	Everett, Wash.		x				x
Fort Lewis	250	Fort Lewis, Wash.		x				x
McChord Field	100	South Tacoma, Wash.		x				x
Sunset Airport	160	Spokane, Wash.		x				x

Recommended Minimum Standards For Gas-Fired Winter Air Conditioning Systems and Low Temperature Warm Air Systems

Washington Gas Light Company
Washington, D. C.

[Part 2]

IV. AIR DISTRIBUTION SYSTEM

A. Design

1. All air circulated through the heating unit shall be delivered to and drawn from a substantially air tight duct system, and no circulated air shall be delivered to or drawn from the furnace room proper.
2. The duct system shall be designed to deliver to each room to be heated to 70° a positive supply of warm air of an amount to be figured as follows:

Operating Air Temperature at Register	C.F.M. per 1000 B.t.u. of Room Heat Loss
110	23.0
115	21.0
120	19.0
125	17.5
130	16.5
135	15.0
140	14.0
145	13.5
150	12.5

In addition the system shall be designed for a total C.F.M. rate at least equal in numerical value to 1/15 of the total cubical contents of the spaces heated.

3. Return air volume shall be figured as at least 85% of the quantities indicated in item No. 2.
4. To aid even heat distribution in mild weather, the system shall be so designed that the air delivery temperature from any one register shall not vary more than $\mp$ 30° from the average of the air delivery temperatures from all registers, but in no case shall the register temperature be less than 105° or more than 160°. This will require the insulation of the branches and risers of long duct runs in some installations. (See Sec. A of the Appendix).
   Determination of the temperature conditions is to be made as follows:
   During normal cycling operation of heating unit the minimum temperature shall be observed during the "on" cycle five (5) minutes after the fan starts to operate, the fan switch being in normal adjustment, normal C.F.M. and system properly balanced. At the end of thirty (30) minutes of fan operation with the gas still burning, the temperature at each supply register shall be recorded and the maximum and average temperature determined therefrom.
5. The duct system shall be insulated as follows:
   a. Supply ducts in outside walls shall in all cases be covered with at least ½ inch recommended insulating material on the outer face. The spaces between the two sides and the adjoining studs or masonry shall be packed with recommended insulation throughout the length of the riser.
   b. Supply ducts through unexcavated areas, and in unheated attics, garages and the like shall be covered with at least one (1) inch of recommended insulating material.
6. Design air velocities in the system shall be limited the following:
   Main trunks—700 ft. per minute, maximum
   Branches and risers—500 ft. per minute, maximum
   Supply registers (baseboard)—350 ft. per minute, maximum
   Supply registers (high sidewall)—400 ft. per minute, minimum; 800 ft. per minute, maximum
   Return grilles—400 ft. per minute, maximum
7. The minimum number of supply registers and return grilles for a heated space shall be determined on the basis of 12,500 B.t.u. heat loss per register and per grille, or fraction thereof.
8. The total resistance of a duct system (including supply and return) arising from static pressure, friction and turbulence shall not exceed two-tenths (0.2) of an inch of water column when all other requirements of air delivery are met.
9. No trunk, branch or riser stack shall have less than eighteen (18) square inches in cross-sectional area nor any dimension less than three (3) inches. No trunk or basement branch or riser stack shall have a ratio of width to depth of more than four (4) to one (1). The above limitations may be slightly exceeded for lengths of not over five (5) feet.
10. In cases where two or more independent apartments or dwelling units exist in one building, each apartment or dwelling unit shall have its own heating unit with its own individual, independent warm air supply and return air duct system and thermostat.

11. Supply or return outlets on different floors shall not be connected to a common riser.
12. A supply or return riser may be connected to two outlets provided both outlets are on the same level. When such outlets are placed back to back they shall be separated by a splitter.

B. Construction and Installation

1. Ducts and fittings shall be constructed with double-locked seams, connected at joints with standard "S" and drive slips or in an equivalent method.
2. Risers should be constructed of material not lighter than twenty-six (26) gauge galvanized iron or equivalent. Plenum chambers and trunks should be constructed in accordance with the following schedule of weights and sizes:

Gauge	Width	Standing Seam	Reinforced Seam
26	Up to 18"	—	—
24	19" to 30"	1"	—
22	31" to 48"	1"	1/8"x1"
22	49" to 60"	1½"	1/8"x1⅜"
20	61" to 90"	1½"	1/8"x1⅜"

*3. All elbows shall be of double-radius construction with a center line radius of at least three-fourths of the duct width, or be equipped with multiple vanes (duct-turns) such as to limit the velocity head loss in the elbow at thirty-five (35) per cent of the velocity head at the inlet to the elbow, except that double forty-five degree (45°) stack elbows may be used.
4. Boxing of stud or joist spaces as part of the supply or return circulating system shall not be approved.
5. All ducts, unless concealed, shall be of rectangular design.
6. No pipe, tubing, or fitting for gas shall intersect an air duct or air chamber.
7. Ducts shall be substantially air tight and sealed wherever pipes or fixtures intersect their walls.
8. When a square throat tap branch take-off is used, the take-off fitting shall be double flanged and properly sealed or cemented. Care should be taken that such take-offs shall not be made from a main trunk in a low pressure zone immediately following a trunk fitting.
9. Excess turns shall be avoided except in short branches close to the conditioner.
10. Open riser stacks shall be protected during construction against admittance of plaster and other debris.

C. Damper (not to be confused with register valves)

*1. Dampers shall afford positive control of air movement to and from every register and grille.
2. When a damper is located in the basement, a positive locking device shall be provided together with an indicator to designate the position of the damper; and the damper shall be properly labeled by the installer to indicate the space served.
3. Stack-head dampers shall be designed and located to avoid air noise when in normal adjustment.
4. Back-draft dampers shall be installed in each garage supply branch, and in each basement room return branch.
5. Dampers shall be sufficiently tight so that air velocity at the register shall not exceed fifty (50) feet per minute when dampers are closed.
6. Freedom of operation of all dampers shall be carefully checked after installation.

D. Supports

Supports and reinforcements shall be as prescribed by D. C. Building Regulations and other local codes covering the installation of conditioned Air Heating or Low Temperature Warm Air Heating System.

V. REGISTERS AND GRILLES

A. General

1. Registers and grilles shall have a free area of not less than seventy-five (75) per cent of the total face area.

B. Supply Registers

1. Registers shall be of the diffusing type with vertical directional vanes. These vanes shall be adjustable to vary the direction of air flow.
2. Registers shall be assembled against gaskets to prevent streaking.
3. Registers shall have provision for closing which is readily accessible from the room in which the registers are located. Register valves shall make a sufficiently tight fit as not to cause an air noise when closed.
4. Each heated room shall be provided with at least one supply register.
5. Supply registers shall be located in the baseboard in all cases, with the exception that high supplies may be used in garages, and in rooms above spaces that are normally heated to 70° F. Exception to this standard shall be the responsibility of the party in authority.

*6. Registers or grilles shall not be installed directly into the sides of ducts or plenums. A branch or collar, fitted with a proper damper shall be placed ahead of each register or grille so located.

C. Return Grilles

1. Return grilles are not permitted in garages and are not recommended in baths, lavatories and kitchens.

*2. Return grilles are optional in pantries, maids' rooms and in dressing rooms or upper halls of less than 5,000 B.t.u. loss; and are required in all other heated rooms except as restricted in No. 1 above.
3. Grilles shall be so located as to preclude drafts and, unless it is impossible to do so, shall be located on or adjacent to outside walls. Bottom of opening shall not be more than two (2) inches above floor.
4. Grilles, if installed in kitchens, pantries, baths, lavatories, and maids' rooms shall have face valves.

VI. FILTERS

A. The Winter Air Conditioning System shall in-

clude filters.

B. Filters shall be easily accessible for removal with sufficient clearance provided for this purpose.

C. Filters should not be installed during construction or drying out periods of new houses or until installation of the heating system is complete in previously constructed houses.

D. Filters shall be installed in compliance with designations provided on filters as to the proper direction of air flow through them.

E. Filters shall have a face area of at least 1 sq. in. per 160 B.t.u. of hourly input rating.

VII. HEATING UNIT

A. Design

Heaters shall be of a type tested and recommended by the Washington Gas Light Company Laboratory.

B. Size

Unit sizes shall be selected according to the following schedule:

Hourly B.t.u. Heat Loss of Building	Minimum Hourly B.t.u. Basement Ducts Bare	Input to Conditioner (—2% tolerance) Basement Ducts Entire Insulated
30,000	46,000	44,000
35,000	53,700	51,400
40,000	61,400	58,700
45,000	69,000	66,000
50,000	76,700	73,400
55,000	84,400	80,700
60,000	92,000	88,000
65,000	99,700	95,400
70,000	107,400	102,700
75,000	115,000	110,000
80,000	122,700	117,400
85,000	130,400	124,700
90,000	138,000	132,000
95,000	145,700	139,400
100,000	153,400	146,700
110,000	168,700	161,400
120,000	184,000	176,000
130,000	199,400	190,200
140,000	214,200	205,400
150,000	230,000	220,000

This schedule is based on a minimum of 1.53 B.t.u. input per hour for bare ducts, or 1.47 B.t.u, input per hour for covered ducts (—2% tolerance) for each B.t.u. of hourly heat loss. In no case shall the input be selected at less than this ratio; nor should the unit installed have an input rating greater than 150% of the required minimum rating, unless to meet the condition outlined in the following paragraph. The unit selected must have an input rating such that when the input rating is multiplied by 13, the resultant numerical value will be greater than the total cubical contents of the spaces to be heated.

The building heat loss upon which the unit selection is based should be calculated from heat loss information and factors in the Appendix.

C. Accessibility

All heating surfaces, burners, burner attachments and controls shall be easily accessible for cleaning and servicing.

D. Safety Controls

1. Thermostatic safety pilots shall be of the compensated and quick operating type, capable of shutting off in a maximum of two minutes in a hot combustion chamber. If of the adjustable type, the adjustment means of thermostatic safety pilots should be so designed that they cannot be adjusted to cause opening of the gas valve unless pilot is ignited. Thermostatic safety pilots of the non-adjustable type are desired.
2. A high air temperature limit control with a maximum setting of one hundred seventy-five (175) degrees F. not depending upon electricity for its operation shall be installed as directed by the manufacturer's instructions.
3. All controls, tubing and wiring shall be compactly and securely assembled to the heater in a manner precluding the possibility of accidently catching against or displacing such materials.

E. Control Systems

The control system shall be so designed that the heating unit may be operated during electric power failure under the control of the high temperature limit device.

F. Fan Motor

Fan motor shall be equipped with a thermal overload switch and an adjustable pulley.

VIII. BALANCING SYSTEM

A. Unless a system, upon completion, can be immediately, and fully balanced for proper heat distribution by the temperature method, a preliminary balancing shall be made. This preliminary balancing shall be based on air measurement at each outlet in accordance with design calculations.

B. All installations completed before November 1, shall be further completely balanced by the temperature method by December 31, and all installations completed during the heating season after November 1, shall be so balanced within thirty days of occupancy.

C. Any system which has not been temperature balanced shall be so balanced within one week of a request of the customer.

IX. INSTALLATION CERTIFICATE

The system shall bear a "Gas Winter Air Conditioning Installation Certificate" signed by the Installer and endorsed by the Distributor of the conditioning unit as a guarantee that the system is in accordance with these Recommended Minimum Standards. (See September issue.)

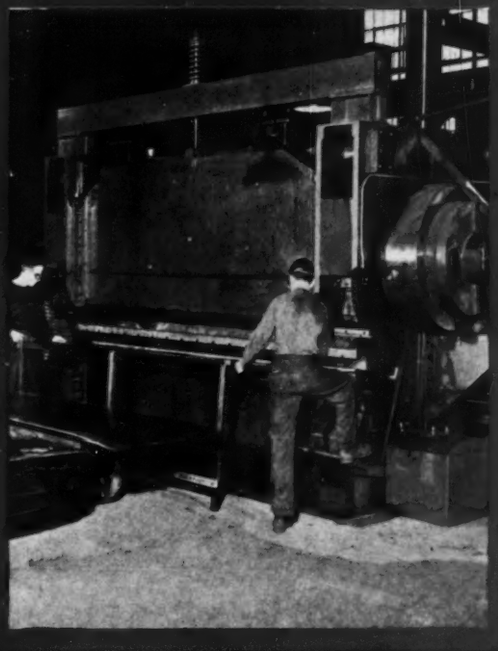
X. GENERAL

All systems shall be designed to maintain an average temperature of seventy (70) degrees F. in each space to be heated, and seventy-five (75) degrees F. in bathrooms when the outside

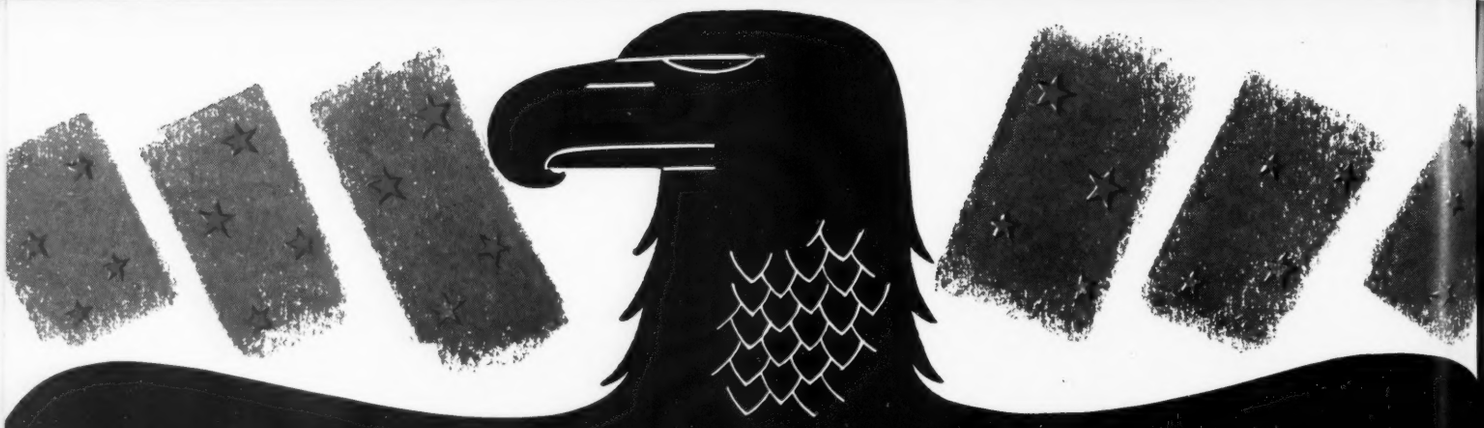
(*Continued on page* 105)

AMERICAN ARTISAN

SHEET METAL SECTION



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



DEFENSE FIRST!

An open letter from Milcor Steel Company

OUR COUNTRY is engaged in an all-out full-speed defense program, building the equipment necessary for the defense of this nation against aggressor countries — to maintain the freedom of the seas and also, under the provisions of the Lend-Lease Act, to help other countries in order that they may help us in our defense of the American Way of Life.

Milcor is helping in that program, helping by supplying necessary building material for the construction of cantonments, navy bases, airports, defense housing, and industrial plants for the production of munitions. We are also manufacturing supplies and equipment for the several branches of our armed forces.

Because our products are made of steel and because steel is on the critical list of defense materials, we know perfectly well that we cannot carry on our regular business in a normal way. In the face of these facts, we are not forgetting our obligation to our regular trade. We understand their need for our products in order to keep their businesses operating and to provide employment for their people.

We are continuing to supply our regular trade on a restricted basis in proportion to the amount of raw material available to us.

Our first obligation now is to help in every possible way to aid the defense program. Beyond that we will continue to serve our trade as best we can under present conditions.

MILCOR STEEL COMPANY

Ed Tanner

President

MILCOR STEEL COMPANY

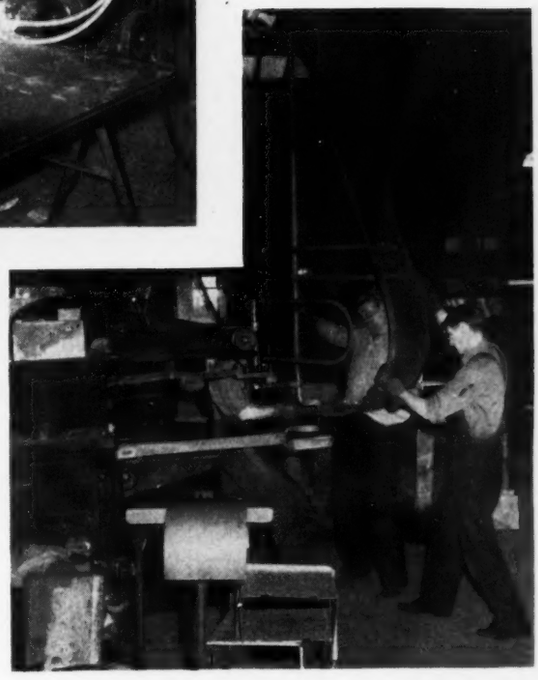
MILWAUKEE, WISCONSIN — CANTON, OHIO

CHICAGO, ILL. • KANSAS CITY, MO. • LA CROSSE, WIS.
• NEW YORK, N. Y. • ROCHESTER, N. Y. • BALTIMORE, MD.

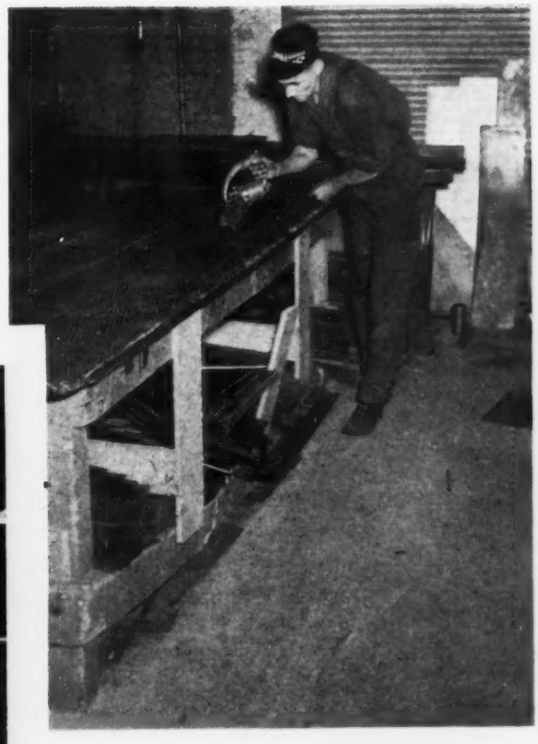
Sales offices in principal cities

F-211

Above—The side frames having been welded, the sides are placed as shown and spacer bars are welded between to form the guard frame. The steel-topped table is drilled for fixtures to hold the separate side members during welding.



Center and Bottom—Frames completed, the expanded metal is placed inside the angles and spot welded to the angles at frequent intervals. Small hand clamps and the three-man crew hold expanded metal pieces in position during welding.



The expanded metal is cut with an electric shear following a pattern.

All-Welded Machine Guards

STREMEL BROS. MFG. CO., Minneapolis, have for several months been fabricating all-welded machine guards for rock crushers. Steps in the fabricating process are shown in the photographs above.

The two side pieces of the frame work, of 1x1x1⅛-inch angles cut to size and bent are laid in a fixture on the steel-topped table and welded by electric arc. Then a right and a left side are stood up on the table and the cross bars inserted between. The bars are held in place by small clamps. When the bars are arc welded to the sides, the framework is ready for the perforated metal faces.

The perforated metal is cut to template with an electric portable shear as shown in a photograph. The cut pieces are then laid in the angles and spot welded to the frame. First a side is spotted on. Then the edge strip is spot welded on. Last the second side is welded in place and the guard is finished.

Guards made by this all-welded process are rigid, of unit construction and definitely less costly to fabricate than older construction.

Two-Prong Y

Solved by Simplified Triangulation

By William Neubecker
Head Instructor
Sheet Metal Department, New York Trade School

A CORRESPONDENT from Indiana asks for information on laying out the patterns for various Y branches that are streamlined and contain two, three and four prongs.

In the accompany illustration a two-prong fitting is shown developed by the simplified method in triangulation. This method can be applied to any number of prongs regardless whether the main duct is round, square or rectangular.

Computing Diameter of Main Duct

In Fig. N, a plan and elevation of a two-prong fitting is shown. The one prong is 6⅛ inches in diameter and the other 5⅛ inches as shown. As the main duct must be equal to the combined area of these two prongs, the diameter of the main duct can be found by consulting a table of Areas and Circumferences, in which will be found that the area of 5⅛ inches diameter will be 20.62 sq. in. and the area of a 6⅛ inches diameter 29.46 sq. in. $20.62 + 29.46 = 50.08$ or the combined areas of the two prongs.

Now follow down the column of areas to the nearest number to 50.08 which will be 50.26 which suggests an 8 inch diameter duct shown in the drawing by the ? mark. If no table is at hand it can be solved mathematically using the following formula:

$$\sqrt{\frac{5.125^2 + 6.125^2}{.7854}} = 8$$

If the reader is not familiar with the formula, the ordinary steel square can be used as a lightning calculator as follows: Set the rule from 5⅛ on one leg of the square to 6⅛ on the opposite leg and it will measure 8 inches. This rule applies to any number of prongs.

Developing Pattern Shape

When laying out the pattern no plan is necessary. Simply reproduce the front elevation as shown by *A* and *B* at the right and on each end of the two prongs and main duct draw a semi-circle of the required diameter, making the bridge 5-6 as desired.

Now space both semi-semi-circles at the branches, into equal divisions as shown by the small figures *1* to *5* and *6* to *10* and from these divisions at right angles to *1-10* draw lines to intersect the upper line of the branches at *2'* to *4'* and *7'* to *9'*. As the semi-circles on the upper branches cover four divisions each then divide each quadrant of the lower semi-circle also into four divisions each as shown from *11* to *15* and *15* to *19*. From these divisions at right angles to *11-19* draw lines to intersect the base line *12'* to *15'* and *15'* to *18'* respectively. Now connect all numbers in *A* and *B* by solid and dotted lines as shown.

Of course, in practice, more divisions are used according to the diameters of the prongs and main duct. These solid and dotted lines in both branches *A* and *B* represent the base lines of sections to be constructed, whole altitudes are equal to the various heights in the three semi-circles.

The procedure is as follows: For example: To find the true length of the solid line *3'-17'* in branch *A*, set off this distance in the diagram of solid true lengths for *A*, as shown by *3'-17'*, from which points erect the perpendicular lines, making *3'-3* and *17'-17* equal respectively to *3'-3* in semi-circle *a* and *17'-17* in the semi-circle *c*. A line drawn from *3* to *17* in the true length diagram for solid lines for *A* will be the desired true length.

Again for example: to find the true length of the dotted line *7'-13'* in branch *B*, set off this distance in the diagram of dotted true lengths for *B* as shown by *7'-13'* from which points erect perpendicular lines, making *7'-7* and *13'-13* equal respectively to *7'-7* in the semi-circle *b* and *13'-13* in the semi-circle *c*. Draw a line from *7* to *13* in the diagram for true and dotted lengths for *B*, which will be the desired true length. In this

(*Continued on page* 110)

*All rights reserved.

PATTERN FOR STREAMLINED PRONG FITTING SOLVED BY THE SIMPLIFIED METHOD IN TRIANGULATION APPLICABLE TO ANY NUMBER OF PRONGS REGARDLESS WHETHER THE MAIN DUCT IS ROUND, SQUARE OR RECTANGLE

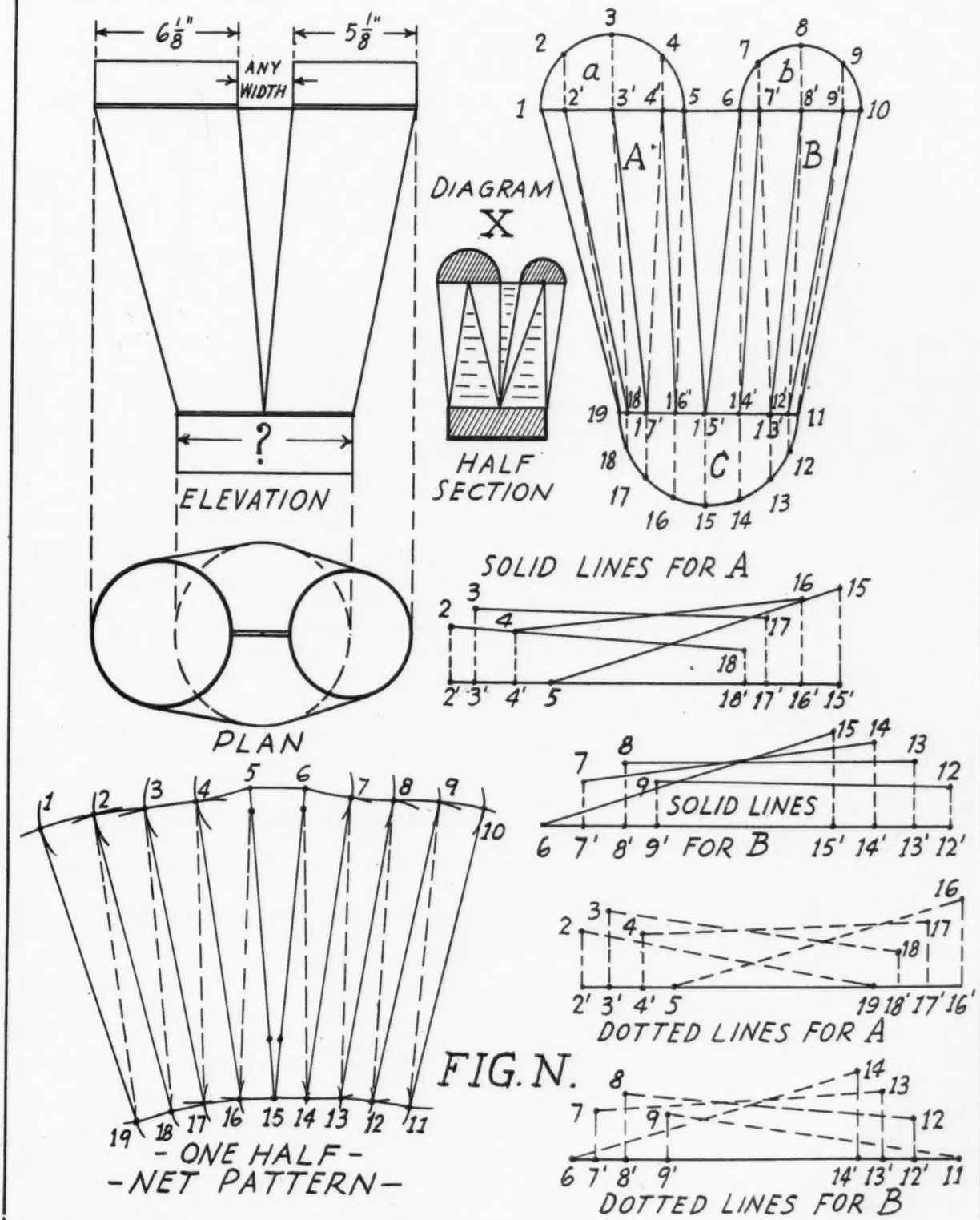


FIG. N.

Ventilation Without Heat Removal

By Paul R. Jordan
Indianapolis, Ind.

A reader submits this problem of enlarging a dance room-tavern where heat supply is not too plentiful, but smoke and fumes too abundant. The result must be a system to carry away smoke, but no heat. Here is one suggestion, with data.

IF we understand the problem rightly, there will be two rooms thrown together, one of them 30′ x 38′ and the other 45′ x 40′. The ventilation layout will want to cover both rooms.

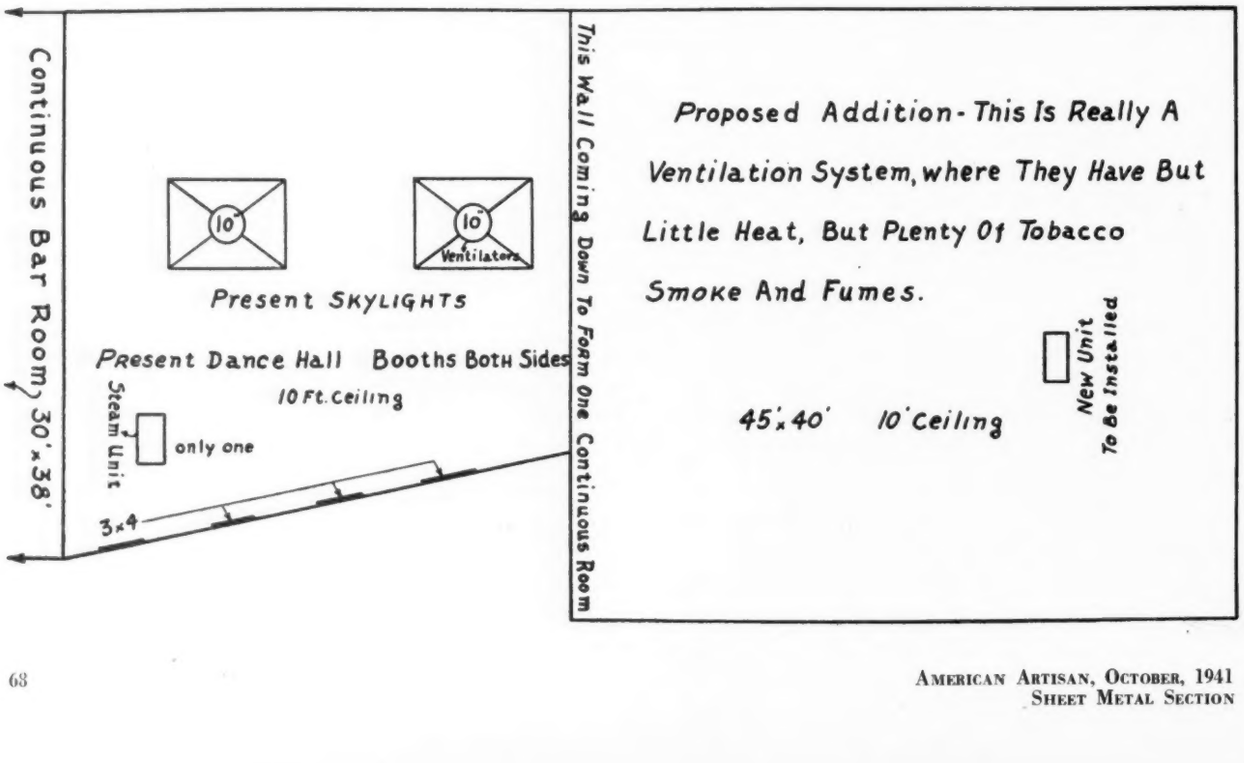
The heating system is likely to be inadequate and heat conservation is a prime necessity. There is only one way to conserve heat and that is to exhaust from the floor. Any exhaust from the ceiling will take out heat. An exhaust from the floor will take out the coldest air in the room, and in addition will be beneficial in creating a circulation which will bring heat down from the ceiling.

In a recreation room and bar it is desirable to provide exhaust both from the floor and from the ceiling but only one exhaust at a time will be used. This means that each exhaust opening will have to be equipped with either a louvred register or with a door or damper. Louvred registers are of course neater. They look better, although no louvred job closes off as tightly as a single leaf job. A louvred register, however, is generally considered satisfactory for a job of this kind.

An installation of this kind calls for a full sized duct running from the floor to the ceiling and with the upper end connected with the exhausting device. The simplest and best way to handle this is to install a fan ventilator immediately above the duct, on the roof. In case of a one story building this can be done, but where there are intervening floors between the dance hall and the roof it sometimes cannot be done in that way. It is necessary then to use a wall fan with a horizontal duct leading from the registered riser to the fan.

In any event the job should be sound insulated as much as possible. A three-speed fan is desirable not only on account of flexibility in capacity, but also on account of the element of noise. With a three-speed job the noise can be cut in proportion to the speed of the air delivery, without cutting off the ventilation altogether. Extreme cold weather often makes it desirable to cut down ventilation somewhat below what would be considered necessary in mild weather.

Now as to the necessary volume. For recreation halls the minimum is 80 cubic feet of air per hour for each square foot of area. Bad conditions call



for 160 cubic feet per hour for each square foot of area, while extremely bad conditions may call for as much as 300 cubic feet. From the tone of the letter we gather that this condition is rather worse than average, that is, somewhere between the average condition and the bad condition. This would call for a split between the 80 foot figure and the 160 foot figure, giving us a figure of 120 cubic feet per hour for each square foot of area.

If we have figured this correctly, this combined floor has 2940 square feet. Multiplying this by 120 gives 352,800 cubic feet per hour. Dividing this by 60 gives us 5880 cubic feet per minute.

Shortcomings of Gravity Exhaust

A gravity installation, that is a duct drawing from the floor and capped with a gravity ventilator, is not practical. Such an installation is likely to backdraft, even if a rotary or turbine ventilator is used. This job really calls for a fan.

There will be a certain amount of resistance set up both on account of the registers and ducts, and also on account of the fact that in pulling from the floor, the exhausting device will be handling a heavy column of cold air. It is therefore necessary that the fan be capable of delivering against a certain amount of resistance. A centripeller fan, that is a fan combining centrifugal and propeller action would be ideal for this job. It can be used in a very slow speed type, which will make for quietness.

Propeller Fan Requirements

If a propeller type fan is used it will have to be high speed, and in addition to this will have to be equipped with an anti-tip recirculating ring and with blades so designed as to eliminate backing up through the center. This means that the blade will have to be wider and of deeper projection at the center.

In order to deliver 5880 cubic feet of air per minute a 30-inch Centripeller fan will be necessary.

In the direct connected high speed fan ventilator a 24-inch blade traveling at 1725 R.P.M. will handle this job, but will be very noisy. A 30-inch direct connected fan at 1140 R.P.M. would handle this amount of air but would be considerably noisier than the centripeller type, as it would travel at more than double the speed.

Exhaust Openings—Location

Now as to the location. The register openings should be as far as possible from the intakes. We presume that there are windows on all of the outside walls. The windows and doors probably would furnish the intakes. If there is only one blank wall, the exhaust openings should be at about the center of this wall. If there are two blank walls, the exhaust openings should be near the corner between the two blank walls. If there are three blank walls, the exhaust openings should be near the center of the middle wall. If there are intakes on all four sides, it would be desirable to have the exhaust openings at the center of the combined room but that is usually impossible. The next best thing is to locate the exhaust openings in the center of the wall farthest away from the entrance door, and keep all of the openings on that wall closed.

In operation, all that would be necessary would be for the owner to bear in mind that the lower exhaust conserves heat and the upper exhaust removes heat. During winter the upper opening should be kept closed, so that all of the exhaust will come from the lower opening, excepting when the room gets too hot. In case the room gets too hot, the upper register should be opened long enough to cool it off. In summer of course the upper register should be open most of the time. Exhausting from the upper opening in summer will be very beneficial from the standpoint of cooling, as well as for ventilation.

There will be no advantage in more than two exhaust openings, and these should both be installed in the vertical duct. This duct should be the equivalent in area to the fan. The registers should each be of a size sufficient to furnish free area equal to the sectional area of the duct, so that there will be exhaust without restriction when one register is open and the other one closed.

The present skylights should be closed up. When the exhaust fan is operated it will cause these to downdraft, and that would do more harm than good.

Basic Specification For USHA Defense Housing

ENGINEERS and Economists of the United States Housing Authority have for months been studying the problem of adequate insulation, says National Mineral Wool Assn. They have now just issued their basic specification for insulation of defense housing, which contains the following important provisions:

"Insulate top story ceilings with loose-fill, bat, or blanket type insulation, in a sufficient thickness to provide a total thermal conductance of the insulating media only (exclusive of air spaces) of not more than .083 Btu. per hour per square foot per degree F. temperature difference between the two surfaces of insulation."

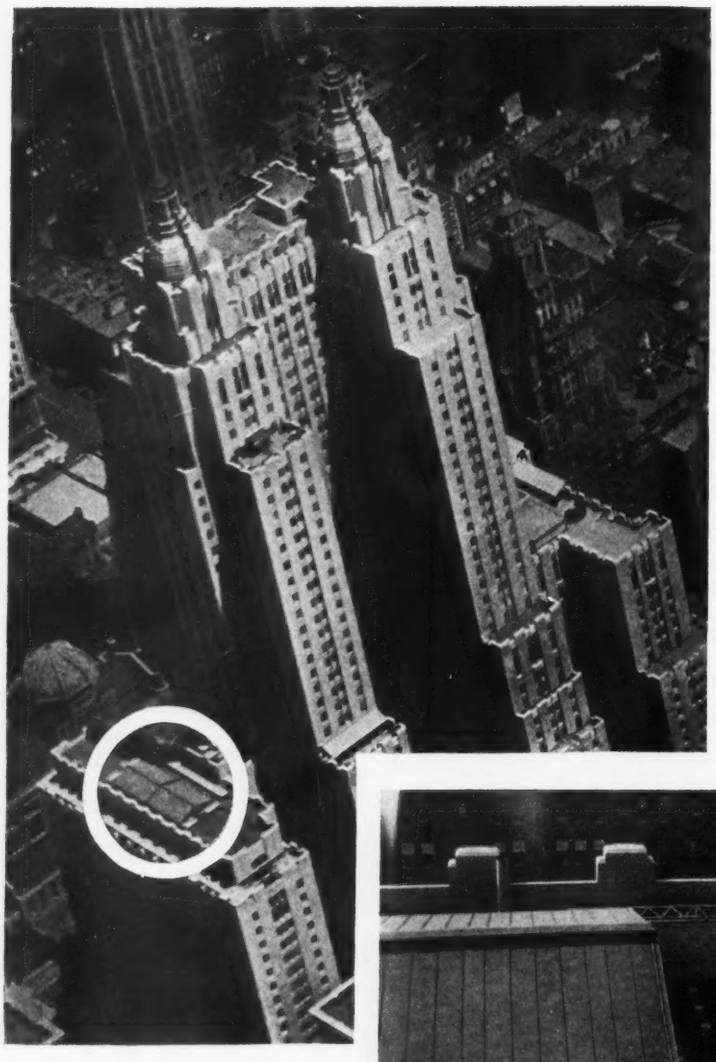
The following NOTE is made to the Architect:

"Specifying a total thermal conductance of .083 Btu. (Paragraph (3) under "Scope") requires approximately 3⅝ inches of insulation."

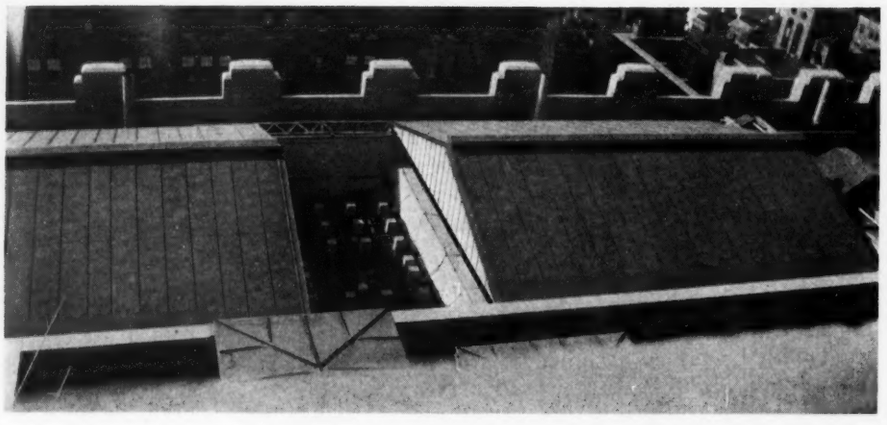
This follows the pattern suggested in the Bureau of Mines Information Circular No. 7166, which states: "On the basis of an average saving of even $25 a year with insulation, 200,000 defense houses would save the Nation well over $5,000,000 a year if insulated. This saving is equivalent to 12,000 carloads of coal or 8,400 tank cars of oil."

An Aluminum Skylight "On Wheels"

R. C. Nason



Air view of the Waldorf-Astoria set-backs with the movable skylight roof circled in white. The closeup shows the two sections of the canopy with the dining room ceiling exposed.



ONE of the most novel sheet metal roof coverings in the New York area is a double-pitched mobile aluminum unit 25 ft. wide by 60 ft. long made and installed by the National Ventilator Co., predecessor to Best Metal Products Co., L. I. City, N. Y., on the "Starlight" roof garden of New York City's Waldorf-Astoria Hotel. The hotel people refer to their motorized roof-section as a "skylight" and so it is, in fact, but instead of the more customary glass lights, sheet aluminum was used as filler throughout.

The idea for this type of skylight design came about because the hotel management though welcoming crosswise breezes sought roof coolness by providing an opening whereby radiation at this point could be dissipated skyward. Hence, the sheet metal contractor furnished a 60-ft.-long covering divided into two equal sections. These run on tracks to permit adjustment of opening under pushbutton control.

Mobility of the skylight is provided by placement of car wheels under decks, coupled with regular steel car rails as tracks. As there are two sections so also there is one 7½ h.p. electric, reversible motor attached to each section. Motor carriages are bolted to skylights and thus move with them. The hotel engineer accordingly refers to the electric drivers as the "tractors."

Tracktive Equipment

Motor shafts are geared to longer shafts on whose inboard ends are speed reduction gears. Outboard gears, at tracks, engage drive gears on the car wheels to provide movement of the entire skylight section. Tracks are approximately 25 ft. apart. Wall switches in the roof garden restaurant may be used to send the skylight sections in either direction. Though maximum roof opening is 60 ft., the gap may be closed or adjusted to any intermediate length. Direct sunshine thus can be avoided within the restaurant (although

Below—The dining room with the "star light" ceiling. Right—Best occupies a substantial building in Long Island City. After 25 years contracting the company now is moving more and more to the manufacture of metal specialties and, as the sign says, can weld, shear, turn, form, stamp, draw metal.

diners may study the sky if they wish.

This unusual skylight has a shallow deck of aluminum structural members, spacers between panels of the same material on 24 in. centers. Filler material is aluminum sheet and so are the ridge caps and gable ends. Deck foundations of concrete are usually heavy and of 24-in. depth. They are fully copper flashed to the roof. In purpose the concrete work supports the steel rails and, of course, the sections of the rolling skylight. The latter is puttyless.

Best Started As a Contractor

Best Metal Products Co. is an example of a 25-year-old sheet metal shop, headed by J. H. Handlin, which has developed an important specialty fabricating business. Shop work has practically displaced outside general sheet metal contracting and field crews. Outside contracting, however, long was the backbone of the activities of the firm's predecessor, National Ventilating Co., which executed many important contracts.

Widely known among contracts of the original form were the intricate curved skylight on New York City's Pennsylvania Railroad Co. terminal. The original skylight was made and installed by this contractor and, about three years ago, the Best Metal Products Co. furnished much of the material used by Jacob Ringle & Sons, Jersey City, N. J., in extensive repairs to this Penn Station skylight.

The traction motor is housed at the end of the skylight section and drives the shaft shown. Geared drivers at the outboard end of the shaft move the section.

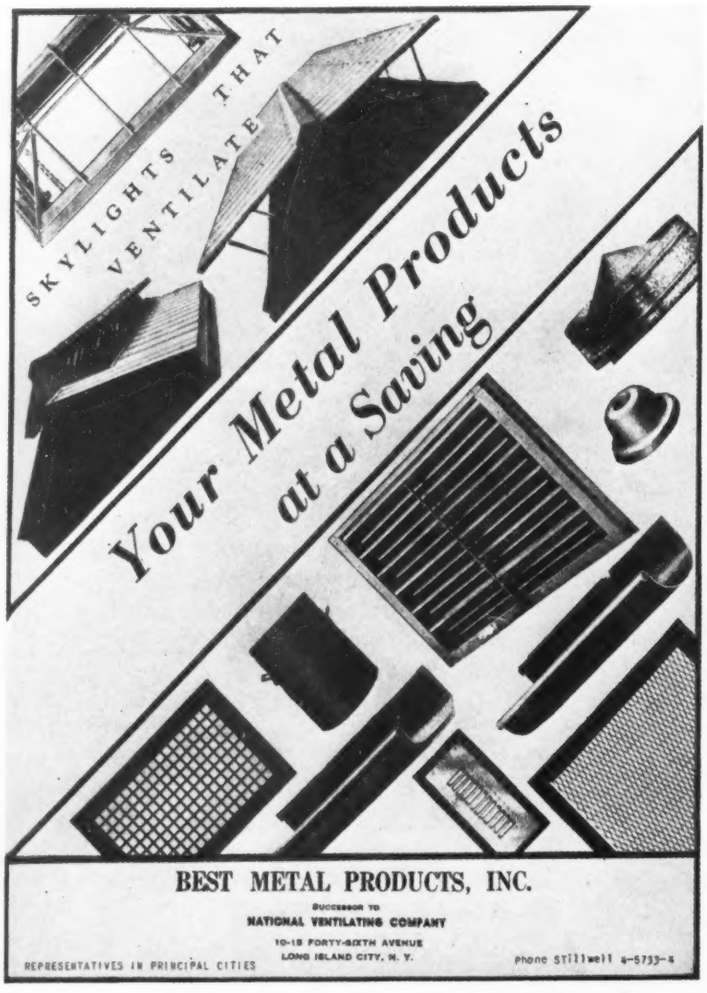
Scope of Fabricating Business

Outside contracting today, however, is practically unsolicited and the sheet metal fabricator prefers to make skylights, ventilation louvers and sundry, other items for installation by other sheet metal contractors. Besides making up many such units, the Best company keeps its presses, shears and other shop equipment busy turning out what may be termed multiple or processed items. One important contract at this time is the fabrication of portable stretchers of the sheet metal company's novel design. This stretcher was "written up" in Popular Mechanics. A single bearer can transport and manipulate a hospital stretcher of special construction. An interesting feature of the construction is that its rubber-tired wheels

may be carried in one hand and the basic parts in the other.

Advertising Specialties In Large Volume

Not long ago Best fabricated 50,000 poster frames for supporting advertising cards in subways, buses and railroad cars. Then there was their contract, running into 20,000 units, for large 18-gauge steel frames for fastening advertising cards onto the sides of express trucks. Most everyone has seen such cards on the sides of Rail-



As the leaflet above shows, Best manufactures a line of sheet metal contractor specialties such as skylights, louvres, frames, ventilators, gutters, screens, grilles, etc.

way Express Co. trucks. The chances are they were made by Best.

Very Light to Very Heavy Items

This sheet metal fabricator also fabricated an order of 550 similar frames for coal trucks and the same number for advertising the products of the Citrous Association in the South. Other items in multiple turned out are heavy-gauge steel casings for car heaters, used in railroad and trolley cars everywhere. Still another order was for terminal boxes for a nationally known telegraph company. Aluminum, circular, transport and storage tins for picture films was yet another order. Many thousand such receptacles that had to be passed by Fire Underwriters already have been made in this sheet metal contracting shop.

Shop and Office Set-up

Multiple-unit fabrication of the foregoing classes necessitates good shop equipment, hence the Best tooling includes: a 10-ft. brake-shear, six presses (especially a large toggle press); then there's a complete machine shop, separate welding departments for torch and electric arc plus several spot welders. Front office personnel includes 3 engineers and 2 estimators, while the present plant personnel includes 17 mechanics.

Best also makes many specialty items in large or small orders. Facilities permit welding, shearing, stamping, drawing, in either light or heavy gauge.

Braking-Forming Operations Important in

"Streamlined" Sheet Metal Training

By Ernest E. Zideck

Instructor, Technical School, Jackson, Michigan

IN THE fabrication of sheet metal products in quantities too small to warrant doing the work by costly dies (remembering that dies cannot be used in similar products slightly changed or in new products of same or related nature but of smaller or larger sizes) the fabricating equipment consists of shears and cutters, of small presses and standard notching and punching dies which may be employed to advantage in ANY size and shape product, and of *brakes* and *rollers*. For joining the parts the spotwelder rapidly replaces the older means of seaming, riveting and soldering.

Braking-Forming Must Be Exact

In modern sheet metal manufacturing the braking-forming operations are regarded second to none in importance. In fact, granted that the layout is correct and the blank coming to the brake is a close replica of the layout or pattern, the further successful processing of the part and its fit with other parts is entirely dependent on braking-forming being done to specifications. More misfits and more reworking are due to faulty braking than to any other single cause. We simply *must* have correctly braked-formed parts to be successful in any kind of multiple-part production.

Forming also is being done by power hammers, notably so in the preparation of panels and multi-radial parts for custom and small quantity bodies. In that connection panels are also formed by air or water driven metal stretching machines, but this mode almost exclusively applies to large panels in which the raise is not too pronounced. These machines and the forming they do seldom figure in fabrication of heaters, cabinets and the volume of similar products having no "raised" tops or walls. In this fabrication the brakes and diverse rollers, with possibly a die for radial corners, are the standard formative equipment.

In production other than by stamping, the braking-forming of parts is being done AFTER the metal pieces have been sheared to size and provided with notches and holes and cuts as called for. The blanks arriving at either the brake or the roller have been fully prepared, by preceding operations, for the formative processes which now take place.

Essential Forming Machinery

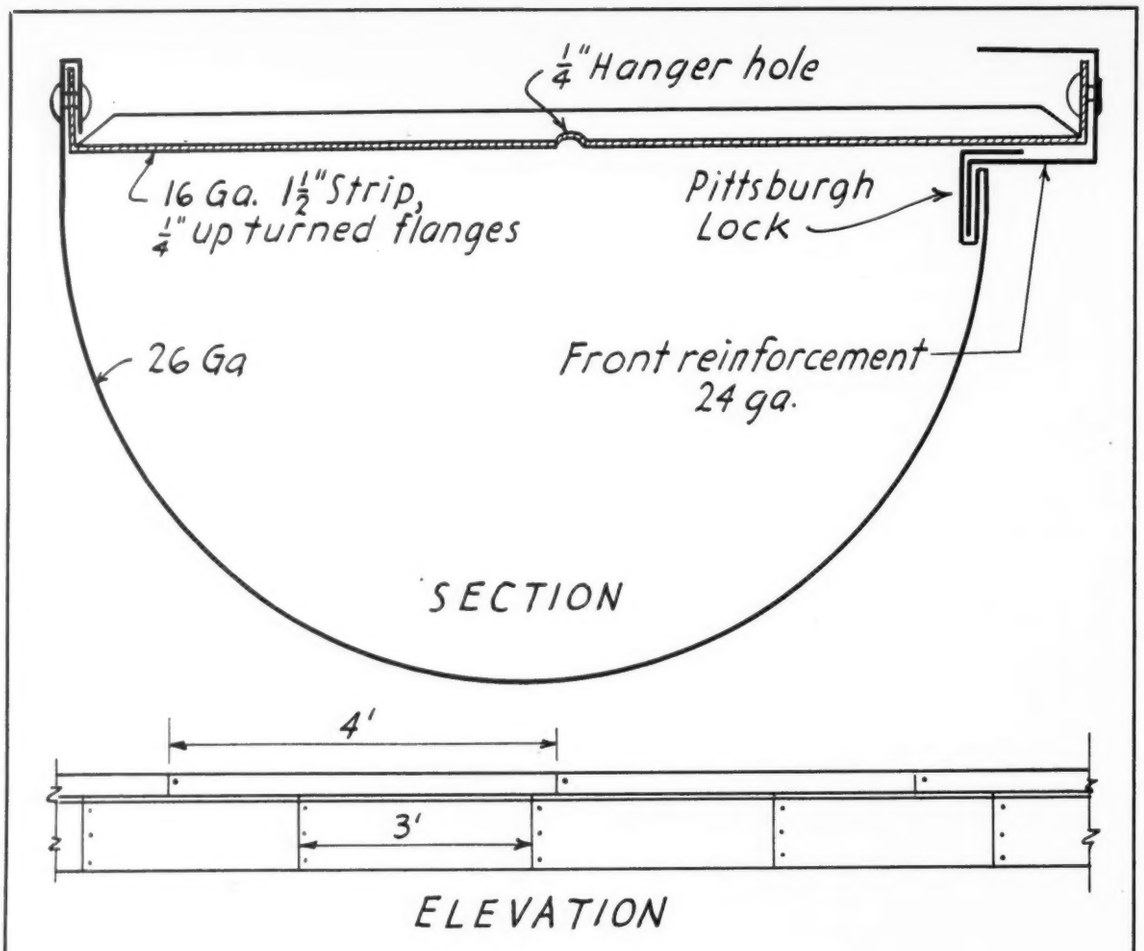
The formative machinery may consist of folders, hand brakes, box brakes, press brakes, common or special rollers, beaders possibly, wiring and turning machines, special shape dies for the press brake and such other forms and means as the work in progress may be done with. A good part of the equipment consists of common sheet metal tools, stakes and specially prepared mandrels on which to complete certain formations by hand. Each specialty calls for minor additional tools which are made in the shop or by a local toolmaker.

In absence of a press brake on which gages can be set and braking-forming done dimensioned from the edge of the metal blank; and where it is impractical to build and employ such gages on the other kind of brakes; the blanks coming to the braking-forming operator have been prick-punched with marks by which to do the several brakings or shapings.

Patterns—Templates—Gages

In both cases, in braking-forming by markings and in braking-forming by gage set-ups, patterns and templates are used. In the former work, the pattern has been used for doing the marking on the sheets; in the latter, the pattern is being used to set the gages by. Templates, which usually are made of 16 or heavier gauge metal, may be applied either on the inside or the outside of the formed metal, showing the operator whether the formations are right or, call for adjustment.

The braking operator must be a well informed, if not also a thoroughly trained or experienced



Eavetrough made in a sheet metal class room: the rollers available being 30 inches long, the radial portion of the trough was made of that length, while the angular front reinforcement, the brake being four feet, was made longer.

A novel use for the Pittsburgh lock has been found in the above connection. The radial part was provided with it and the angular reinforcement was joined to it by means illustrated above. A 16 gauge strip with upturned flanges for rigidity was used for hanger.

man. Knowledge of the formative processes, step by step and of what to anticipate and guard against in the chain of brake operations, will prove of greater value in doing the work than a mere thoughtless repetition of the breaking performance by a "professional" could ever be. This is so, because the brake operator will be the ideal operator only if he also can read the pattern or the print and perform by it without another person watching over him.

Sequence Important in Braking

The greatest difficulty encountered in the formative work in sheet metal attaches to knowing which, in the series of formative steps, is the first step, which the second, and which the next; and in which direction to bend the metal in this or that step. The operator must possess a vivid imagination to *anticipate* the results of this or that step in braking and formation. Not always are the directions as to the succession of brakings contained in the print or given on the pattern. In the blue-print a sectional view is of great help, but even so, the mere imitation of the section would not suffice when the one end of the braked part is provisioned differently from the other end, as happens in vertical positioning of the parts, one end joining to the top and the other end to the bottom of a construction.

It must be remembered that, in sheet metal formative work, mistakes are costly. Though it may be possible to roll the metal in opposite direction in shapings radial, and thus remedy a first wrong form, in angle braking it is impossible to do so, because once the metal has been braked in one direction the bend can not be undone without much labor and without leaving ugly marks; and the part might as well be junked, because it will not pass inspection.

The hazard increases with the number of bends in the part. If we choose the wrong first step in braking, we shall not be able to make the second or third steps, with the wrongly started part

going into discard. That same likelihood of spoiling the part is present in otherwise correct step and right direction braking if we are careless with the gage-set-up or allow the edges of the metal or its first brakes to slip away from the gage. In any multiple-part construction a mere one-sixty-fourth of an inch shy or plus the specified dimension will cause misfits impossible to use.

Braking to Close Tolerances

In the braking of sheet metal that has been provided with markings on which to brake, the operator must be doubly careful, first, because he must hold the metal in position using his hands; and, second, because the dots in the metal caused by prick-punching, through a marking strip or a pattern, will tend to obstruct the holding of the metal in position when the braking blade closes down on it. The dots resemble small hills, and the blade will tend to slip downhill. Correct or, prudent braking results if the operator closes the brake over the hill, causing the metal to flatten, and then opens the brake again for adjustment of the metal on the still visible mark.

In any radial or angular formation of sheet metal the operator will observe certain wisdoms arrived at by experience, among which are:

1. Short pieces of metal, especially of heavier gage, for roll and angle-braking require a different set-up than is necessary for longer pieces. A 90 degree angle in a 6 inch long piece of metal will be attained by a degree-set-up of less than 90 degrees; that same angle in a 48 inch long piece, will require a degree-set-up of about 92 degrees. This is so because, the longer the piece, the more is the resistance of the metal to bend and stay bent.

2. Sharp angular brakes call for a machine set-up allowing the exact thickness of the particular metal between the braking blades. If the blades are set closer than is the metal, the braking results in compressing the metal if not in cutting it. In angular brakings specified to be done on the radius, the braking blades should be set apart *One-Half* of the specified radius. This setting of braking blades for certain radii is important because, in a close layout, metal stretch out has been figured to the specified radius of the bend; and if we do not observe the radius in the bend we run the danger of either shortening or lengthening the stretch-out and causing misfits.

3. In radial formations such as a pipe or circular instead of angular posts the metal that is rolled or brake-formed lengthwise, in the direction in which the sheet has been rolled in the mill, will show ribs or, multiple narrow ridges, which may not be apparent unless the product is finished by enamel or some other lustrous coating. Then we see ugly, not parallel and not equal streaks in the metal, its surface marred by wrinkles. This rib-formation can be overcome by rolling the metal back and forth through the rollers before its final shaping; or, in the radial-braking by a form, (die, in the press brake), forming back and forth.

4. If we brake rapidly, as a press will, the metal will form more readily than if we are slow at it. The same applies to the rolling to form of the metal. Adjustments necessary will differ with the speed we apply in moving the roller-handle or the hand-brake arm, or at what distance away from the metal the press-brake blade or die is released to strike. To obtain uniform results in angles or radii we must work uniformly fast and release the die of the press brake from an equal height while working on the same kind of parts under one and the same machine and degree-set-up.

5. In forming metal to shape, adjustments must differ with the kind of metal we are processing. Soft metal will form more readily than hard metal will. Hot rolled sheets require lesser degree-set-up than cold rolled sheets. Various tempers in the cold rolled metal will call for varying adjustments of the degree-set-ups. Softer metal will tend to bend in a more radial form than harder metal will.

Teaching On School Equipment

All of the above intricacies in braking-forming may be taught in school and demonstrated on the school rollers and handbrake. The student who is well informed on what to expect, what is liable to happen, in braking-forming metal to specified shapes; and who later approaches the shop or factory equipment with knowledge so gained; will undoubtedly succeed in doing the work right. His becoming familiar with the larger or newer equipment in the shop will be a matter of hours, and if he applies to the work at hand the knowledge he obtained in training he undoubtedly will become a better, a more reliable, a more efficient worker than the man who learns braking-forming by being a helper, but who never puts his mind to it.

Usually in the training of men for sheet metal work, little or no emphasis is laid on consequences entailed in haphazard formative work. With each student building his own small item, he alone knows the faulty preparation of the blank or brake-forming of the parts going into the item. But in training men for employment in sheet metal manufacturing, the instructor will do well to teach the importance of each single step in production being done right, because other men will labor at the output of the graduate and complain if his slipshod work causes them trouble.

(*Continued on page* 104)

Welding Galvanized Iron*

WHEREVER uncoated iron or steel would be subject to corrosion, galvanized iron is commonly used. The galvanized coating, however, offers no difficulties in joining these materials by welding. In fact, the practice of welding these materials results in joints which are decidedly superior to those which can be obtained by other methods. In pipe, for example, the welded joint effects no reduction in wall thickness as is the case with threaded joints. Although some of the galvanized coating is removed by the welding flame, this in no way exceeds the amount removed by the threading process. Furthermore, welding can actually increase the corrosion resistance of the metal, in the small zone where the galvanizing is removed, since the heat of the welding flame appears to cause the formation of a highly resistant metal oxide.

In sheet, the advantages of the welded joint are even more apparent. For example, one of the most common joints employed by sheet metal fabricators—the lock-seam and solder-type joint—is usually limited to metal of 20-gauge thickness because of the great difficulty in making a lock seam in heavier gauge metal. Welding puts no limitations on metal thickness and provides a joint which is stronger than the base metal and will not open as a result of rough handling or use.

Coating Is Critical Problem

A few simple precautions should be observed in welding galvanized materials because of the nature of galvanized coatings. The protective coating of zinc, which forms the galvanizing, usually measures from 0.001 in. to 0.005 in. in thickness. It is applied to the iron base material by immersing the sheet, pipe or other form in molten zinc. A layer of flux on the surface of the zinc cleans the iron as it enters the bath and insures a firmly adherent coating of zinc on the galvanized material. This process is called hot-dip galvanizing.

Zinc has a relatively low melting point, only 786 deg. F., and also has the property of volatilizing or vaporizing when heated. Consequently, when galvanized material is heated, as in welding, the zinc coating does not melt and run on the surface as might be expected. Instead, the zinc vaporizes and burns, forming white fumes of zinc oxide.

*Reprinted from "Oxy-Acetylene Tips," March, 1940.

Avoid Inhaling Fumes

For this reason, welding on galvanized metal should be done in well-ventilated locations, as inhalation of zinc oxide fumes released from the galvanized coating may cause temporary discomfort if inhaled in sufficient quantities by the worker. Out of doors the operator usually can work so that the fumes float away from him. In fairly open indoor locations, it is often sufficient to remove the fumes by suction or to drive them away from the worker by the use of a stream of air. However, in more confined spaces, a mask

Fig. 1—Galvanized sheet metal containers are provided with strong and lasting joints by welding. A hood and ventilator carry away the zinc oxide fumes.

that supplies air from an outside source should be worn by the operator. A satisfactory type is a simple mask with a large hose leading only the distance necessary to assure a pure air supply. This type does not require an air pump.

Preparation for Welding

All dirt, grease, and oil along the joint should be thoroughly cleaned off before attempting to weld, but the galvanized coating should not be removed. Galvanized pipe or other material can be beveled by means of the cutting blow-pipe, since experience has shown that this does not seriously affect the coating. During welding, it is best to hold heavy objects or complicated shapes in jigs

and fixtures to assure correct alignment. To prevent buckling and warpage, the welding of galvanized sheet is usually done in jigs of the same general type and design as for other sheet metal products.

Welding Methods

Galvanized materials can be either fusion welded with steel welding rod or bronze-welded. However, since bronze-welding is done at a lower temperature, it has less effect on the galvanized coating than fusion welding, and consequently this method is generally preferred. The welding technique for both fusion welding and bronze-welding galvanized material is exactly the same as for the corresponding uncoated material, whether sheet, pipe or other form.

Welding should be done with the minimum amount of heat consistent with good fusion, in the case of fusion welding, and with correct "tinning action" where bronze-welding is the process used. In the fusion welding of galvanized steel piping systems, it is also well to remember that by the Linde-weld method of joining pipe, a considerably narrower band of the zinc coating is affected than that which is affected by full fusion welding.

Weld Finishing

Fusion welds in galvanized iron are usually given a coat of aluminum paint or similar material. Although it is obviously impossible to paint

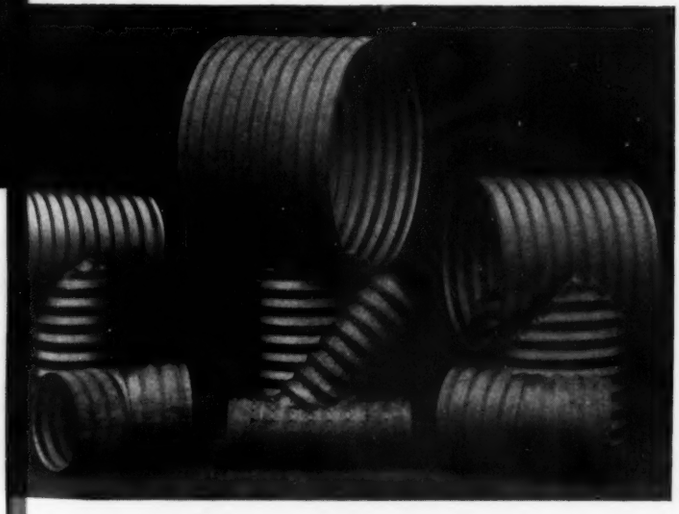


Fig. 2—Quick and economical fabrication of these galvanized culvert specials was made possible by oxy-acetylene welding.

the inside of many welded joints, experience has shown that such joints give perfectly satisfactory service even without painting. Bronze-welded joints give excellent service without any finishing. For some products, the finished bronze-weld may be coated with aluminum paint to give a uniform appearance.

Points to Remember

From the operator's standpoint, proper flame control is of the first importance because upon it depend other factors leading to a high-quality finished job. Proper control of the welding flame will result in just enough heat input to assure a sound joint. Excessive heat means the removal of unnecessarily large amounts of the galvanized coating with a corresponding reduction of the protection which it affords.

Best Results from Continuous Welding

The operator should strive to make a sound weld as he goes along without coming back to reheat and rework portions of the finished weld. Every effort should be made to proceed in as continuous an operation as possible. In bronze-welding, for example, the number of interruptions caused by dipping the rod into the flux can be reduced to a minimum by fluxing a sufficient quantity of bronze rod before beginning to weld. This can be accomplished either by dipping the cold rod into a molten mixture of flux and water or by rolling the heated rod in dry flux. In either case the flux will adhere to the rod in the form of a coating and the only interruptions during welding will be to pick up a new rod. Thus the possibility of overheating the base metal is materially reduced.

Proper Design Saves Time

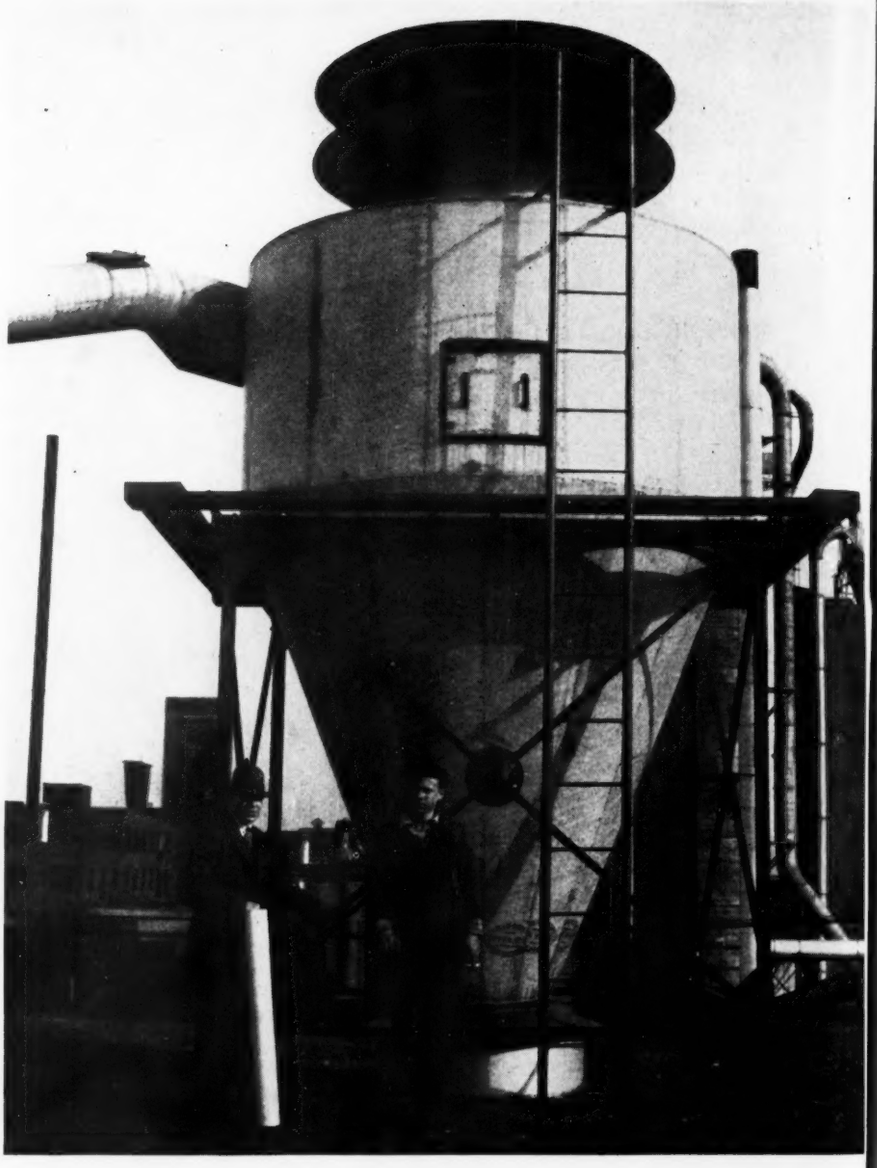
Proper design for welding is also important. The application of bronze on highly stressed areas should be avoided, since the presence of these stressed areas may result in intergranular penetration or cracking of the base metal in that vicinity. Proper choice of joints will permit the welding operation to be made quickly and smoothly.

Joining Thick to Thin Stock

When unequal thicknesses are joined, unless equal heat application is obtained, there is the possibility that the galvanizing on the thinner section will be considerably vaporized and burned before the heavier section has been raised to tinning or fusion temperature. Thus when cast iron and sheet are being joined, it is advisable to preheat the casting so that both parts can be brought to welding temperature simultaneously.

The use of adequate jigs is also important. Jigs designed for welding galvanized metal, if possible, should possess some means for quickly conducting the heat away from the welding zone. In addition, they should be so arranged as to provide the operator with maximum space and freedom of movement for manipulation of the blowpipe.

Low Pressure Collector In a Sisal Conveying System



THE large, roof-located collector shown in the photograph was fabricated and installed by Auer Sheet Metal Company, St. Louis, in a local plant to collect sisal from a "picker" machine. Sisal is a stringy material and in this installation the sisal is conveyed from the "picker" machine to the collector and from the collector is conveyed again by gravity to hoppers serving other machines where further processing is done on the sisal. In this respect the collecting system is not a "waste" line, but a step in processing.

From the picker machine to the collector is a distance of approximately 200 feet; the conveying pipe was built in a uniform diameter of 16 inches of 20-gauge galvanized iron. Cast iron clean out doors were located along the line at about 20-foot centers. This line to the collector is supported by ten frames built of 2 by 2 by $\frac{3}{16}$-inch angles with 10-gauge gusset plates for stiffening.

The collector was built of 18-gauge galvanized iron riveted and soldered to obtain an air and weather tight cone. The collector has a greatest diameter of 10 feet 6 inches and is 15 feet high overall. A 36-inch diameter tubular guard air outlet with a double weather cone was installed as shown.

The bottom discharge outlet pipe for sisal after collecting is 30 inches in diameter to prevent any choking due to sisal characteristics and extends down through the concrete roof slab and terminates at second floor hoppers. The terminal is a swinging or revolving elbow mounted on a special hanger which rotates on a steel track so that the spout can be swung in an arc over several hoppers.

The collector is supported by the framing built of 3 by 3 by $\frac{1}{4}$-inch angles with a 5-inch channel forming the top. Gusset plates of 10-gauge reinforce and stiffen the corners of the frame as shown. The cross braces are 2 by 2 by $\frac{1}{4}$-inch angles. The cat walk is 2 by 12-inch cypress blanks and the ladder is steel pipe with round bar rungs.

The exhauster is located between the collector and the picker machine so that all material passes

(*Continued on page* 117)

"That's why I use Quality-Controlled
PARKER-KALON Self-tapping SCREWS!"

"It's an out-and-out nuisance to try to do a good job with screws that give trouble . . . the kind that won't hold because they're undersize . . . that go in hard because they're oversize . . . that spin around because they're not threaded to the head . . . that break when you draw them up tight."

"You're right, mister! And thousands of sheet metal workers agree with you. They know that Parker-Kalon Sheet Metal Screws always come up to "specs".

There's a good reason why. Parker-Kalon invested thousands to set up a Quality-Control Laboratory which checks everything from wire to finished screws, to make sure that every P-K screw is a *good* screw.

You benefit from the fact that every box of Parker-Kalon Self-tapping Sheet Metal Screws is guaranteed by the Parker-Kalon Quality-Control Laboratory. This guarantee prevents trouble that slows-up your work. It assures fastenings that stay tight and protect your reputation for good work. It's good business to specify screws made by PARKER-KALON Corporation, 190-192 Varick Street, New York, N. Y.

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Hardened Self-tapping Sheet Metal Screws
Sizes and head styles for assembling light and heavy sheet metal.
Hardened Screwnails
For fastening sheet metal to wood securely.
Hardened Masonry Nails
For fastening to brick, mortar and concrete, etc., easier and quicker.

SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

PARKER-KALON *Quality Controlled* SHEET METAL SCREWS

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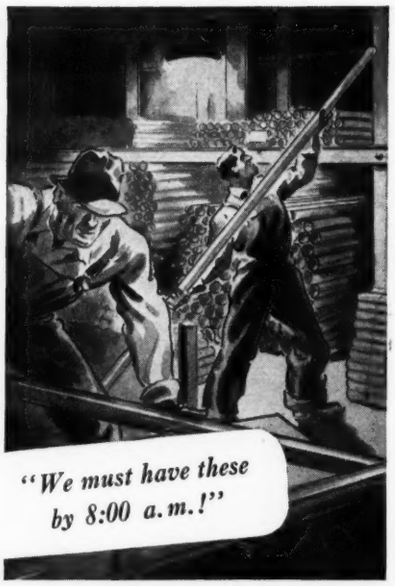
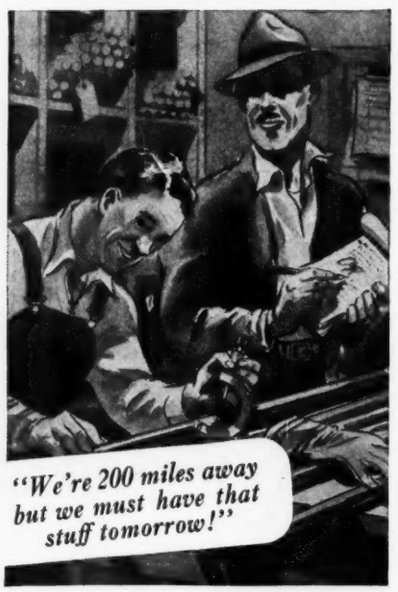
...even today!



"We must have these by 8:00 a.m.!"

"Can you ship these to us today by freight?"

"Our truck is broken down—how quickly can you get us that rod?"



"We're 200 miles away but we must have that stuff tomorrow!"

THESE are just a few samples of the calls that are coming in all day long to the eight Scully warehouses. And each warehouse is on the job day and night — making every effort to provide the kind of service that has made the Scully name famous. Phone, write or wire Scully if you need steel, steel products, copper, brass, tools, equipment and machinery. Our warehouse locations—near the great industrial centers—make prompt delivery possible. You'll find Scully a friendly, reliable source of supply. Ask for a copy of our handy Stock List and Reference Book. It's free.

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Distributors of Steel, Steel Products, Copper and Brass

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The Mark of Quality

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CLEVELAND · PITTSBURGH
BOSTON · BALTIMORE
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The Mark of Service

UNITED STATES STEEL

Association Activities

National Sheet Distributors

The National Association of Sheet Metal Distributors, of which Thomas A. Fernley, Jr., is secretary and treasurer with offices at 505 Arch Street, Philadelphia, has been very active and in close contact with the Priorities Division of the Office of Production Management at Washington, to obtain the proper priority rating for their distributors.

As a result of these activities, warehouse and wholesale distributors have been redefined and are considered "customers" rather than suppliers and file sworn statements on Form PD-19A, in compliance with General Metals Order No. 1.

Frequent bulletins have been sent to members and wholesale distributors informing them of the "Defense Supplies Rating Plan" and how to secure a preference rating for the acquisition of scarce materials. Scarce materials are identified as materials, parts and assemblies which the producer can not obtain sufficiently promptly to fulfill his required schedule of deliveries of Defense Supplies.

"Defense Supplies" are the materials, parts and assemblies entering directly or indirectly at any stage of production into material for delivery under any contracts or orders placed by the army or navy, for the defense of Great Britain, etc., carrying a preference rating of A-1-a to A-10 inclusive, also for the material, parts or assemblies to be used for the manufacture or processing of the foregoing.

Mr. Fernley has sent frequent bulletins to his members informing them of the provisions of the "General Steel Preference Delivery Order" announced by E. R. Stettinius, Jr., Director of Priorities with the form to be filed by customers whose deliveries have been unreasonably deferred or rejected with the Division of Priorities, and has kept them advised of procedure changes for steel orders and maintenance and repair parts.

◆

Florida

The Florida Roofer, published by The Roofing & Sheet Metal Contractors Association of Florida,—Vol. II, No. 5—carries the following important notice on their Fictitious name statute:

"Consult your Clerk of Circuit Court or your lawyer about Chapter 20953—(No. 745) House Bill No. 1175. This is known as the "Fictitious Name Statute." This is an act requiring all persons engaged in business or professions in the State of Florida, except corporations, using other than their own proper names, to register the trade name or whatever name they are doing business under and the extent of interest of all persons concerned with the Clerk of the Circuit Court of the County where the principal place of business is, as part of the public records, and the penalty for non-compliance and providing for 'intention to so register' to be advertised.

"This law is now in effect. Section 5 of the law is as follows: 'The penalty for failure to comply with this law shall be that neither the business nor the members nor those interested in doing such business may defend or maintain suit in any court of this state, either as plaintiff or defendant, until this law is complied with, and further that any person violating this law may have information filed against him by anyone aggrieved or believed to be aggrieved, before the proper court and charged with a misdemeanor, and upon conviction thereof be fined the sum of twenty-five dollars ($25.00), or sentenced to jail for 60 days, or both, in the discretion of the judge of the court who is trying the said case.'"

In various parts of the State, meetings have been held by the Defense Contract Service to give shops the opportunity to register, state their qualifications and get ready to handle defense contracts. Members who are interested in getting government defense contracts should register. Your secretary has the necessary information.

About thirty manufacturers, their representatives, and wholesalers actively support and work for the Roofing and Sheet Metal Contractors' Association of Florida. They know the advantages of a good live organization. The secretary asks full support from all who are directly interested in roofing and sheet metal work. The association is making every effort to collect dues from members.

Suggestions for the annual convention are requested. The situation as far as the roofing and sheet metal business is concerned is constantly changing. The securing of materials is becoming more and more difficult. In estimating work every contingent item must be considered. The association asks that members give more thought to the job and figure to be fair competition.

L. A. Burgess, Secretary-Treasurer.

◆

Milwaukee

The speaker of the evening at the September 8 meeting of the Milwaukee Sheet Metal Contractors Association was M. L. Lavorgna representing the L. J. Mueller Company, whose subject was "A Hard Way," presented in film and sound and illustrating the history of that company. Mr. Lavorgna gave a short talk prior to reeling off this sound picture which encompassed some of the conditions of the day and how they were to be met.

The Solid Fuel Institute has requested the association supply a speaker on heating problems for their October meeting.

The chair appointed a Committee to work out something tangible for the benefit of the heating contractors, composed of R. H. Fetting, chairman, M. Schaar, F. Kramer, A. Walters and Walter Marth.

Member Schaar related his interview and discussion with a member of the Federal government regarding the status of the heating contractors problem of seasonal time and that those operating on residential work as in the past would not be subject to the act.

Memorial services were held for member Wm. F. Drake, who died August 31.

The usual get-together meeting followed adjournment at 10:30 p. m.

Paul L. Biersach, Secretary.

Surplus Stock Aluminum and Stainless

Dayton Hessler, of the Dayton Hessler Company, 913 North State Street, Syracuse, N. Y., advises that he has in stock and wishes to dispose of the following:

Ten sheets half hard 2 S sheet aluminum 22 gauge 36 x 96 in., approximate thickness .025.

Ten sheets stainless steel made by Crucible Steel Co., Rezistal KA 2, annealed and polished No. 4 finish one side, approximately 26 gauge, 36 x 96 in.

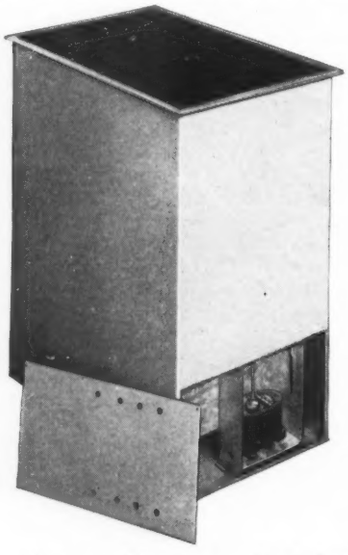
New Products

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 88 and mail to us.

● Indicates product not listed in 1941 Directory.
△ Indicates manufacturer not listed in 1941 Directory.

166—Oil-Mizer

Essick Manufacturing Company, 1950 Santa Fe Ave., Los Angeles, is announcing a new oil-fired floor furnace for use with No. 1 fuel oil. There



are eight models—four natural draft models and four forced draft models —with Btu outputs of 22,750, 26,000, 29,250, 35,750, 42,500 and 45,500. Dimentions are 20x28 and 24x30 inches, with heights 26 and 44 inches.

◆

167—Oil-Fired Conditioner

The Majestic Company, Huntington, Indiana, offers an oil-fired winter air-conditioning unit—the 400 series heavy duty steel—100,000 and 125,-000 Btu capacity.

Specifications include a primary heater of boiler plate steel, a superheater radiator which provides 31 square feet additional heat radiating surface, inner casing lining, 22-gauge furniture steel cabinet, controls, filters, blower and oil-burner. Burner capacity is 1 to 1.35 gal. per hour.

◆

●168—Series H Luxaire

The C. A. Olsen Mfg. Co. of Elyria, Ohio, manufacturers of Luxaire heating and air conditioning equipment, has added the Series "H" Utility air conditioning unit to their line of gas-fired furnaces. This compact unit, finished in two-tone green hammerloid

enamel, was designed to meet the ever increasing demand for an economical, efficient gas-fired air conditioning unit where installation space is a premium.

Made in two sizes with 65,000 to 100,000 Btu. input.

◆

●169—Panel Control Boards

Homer Furnace & Foundry Corporation, Coldwater, Michigan, offers control board panels.

A forced air control system consists of a thermostat, spring return damper motor and combination controller.

A blower and draft control board (both regulated by room thermostat) consists of an Acratherm, program control relay, combination controller and damper motor transformer.

A draft and check control board—warm air control system—controlled by the room and bonnet temperatures, consists of a thermostat, spring return damper motor and high limit Airstat.

A blower and stoker control panel (both regulated by room temperature) consists of an Acratherm, program control relay, combination controller and Timerelay.

Electric Janitor panel—spring return draft and check control—(controlled by room temperature) consists of a thermostat and a damper motor, separate transformer, damper chains, pulleys, etc.

Stoker control only for warm air furnace consists of an Acratherm, Timerelay, and Airstat.

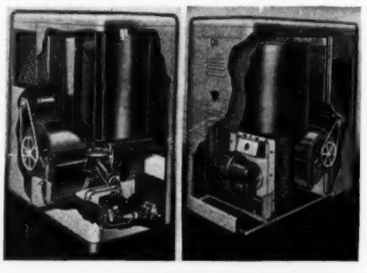
Blower and stoker control (stoker controlled by room temperature. Blower controlled by bonnet temperature) consists of an Acratherm, Timerelay, and combination controller.

◆

170—Compact Conditioners

The Rybolt Heater Company, Miller St., Ashland, Ohio, announces two winter air conditioner units—one gas-fired and one oil-fired. These units are unusually compact and designed to fit into limited space.

The new Rybolt Series RS gas-fired winter air conditioner is complete with quiet-running blower, automatic humidifier, room thermostat and dust-stop filters. The cabinet is finished in hammerloid enamel. Shipped completely assembled. Double protection gas valve control guarantees safe operation under all conditions. If pilot fails, the gas automatically shuts off.



If electric power fails, diaphragm gas valve can be operated manually. When power returns, automatic action resumes.

The new compact Rybolt oil-fired unit is sized to fit into minimum space. It is completely automatic and quiet in operation. The oil burner itself can be pulled out in front of the unit making it extremely easy to service. Burner controls and blower are completely concealed, yet easily accessible. The unit is complete with quiet-running blower, Dust Stop filter, automatic humidifier and room thermostat. Cabinet is finished in hammerloid enamel.

AEROFIN

Pressures

AT HALF A MILE ARE NOT ENOUGH

★ **Pressures half a mile down in the ocean are not enough to rupture Aerofin tubing. In fact, pressures at this depth about equal the standard pressure test of 1000 pounds per square inch given every Aerofin heating coil before it is shipped from the factory.**

★ **The 1000-pound hydrostatic pressure, one of three severe tests applied to Aerofin coils, is your assurance of trouble-free operation. That your coil will not leak or pull apart, is proved by a test of 400 pounds of air under water, and a steam test of 200 pounds. Whatever your application for heating or cooling, there is an Aerofin coil that will meet your every requirement. Where your job calls for the ultimate in coils, call for AEROFIN.**

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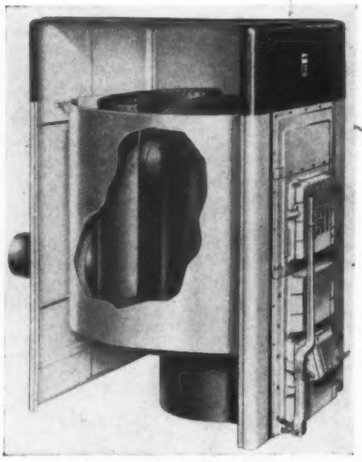
New Products . . . . . .

For your convenience in obtaining information regarding these items, use coupon on page 88.

171—Arlington "Square"

The American Radiator & Standard Sanitary Corporation, Pittsburgh, Pa., announces a new Sunbeam steel furnace—the Arlington "Square"—moderately priced. This newest member of the Sunbeam line is a square jacketed furnace with all the improvements of the conventional "Arlington" furnace, regularly furnished with a round galvanized casing, including a larger, more massive radiator, duplex grates, full height fire box and higher ratings. The jacket is finished in dark placid blue and black and has a soft suede texture.

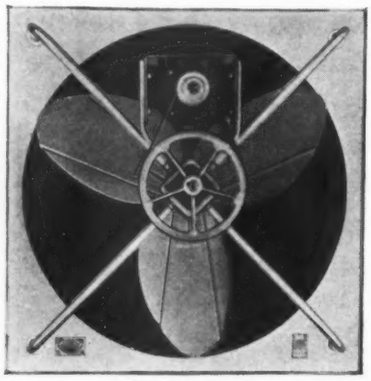


The Arlington "Square" comes in four popular sizes, with units from 20 inches to 27 inch shell diameters. All sizes are available in models for oil and coal—stoker or hand-fired. Oil-fired units are offered in gun or rotary type models.

◆

172—Steel Tube Mount

Autovent Fan and Blower Division of The Herman Nelson Corporation, 1807 N. Kostner Ave., Chicago, has redesigned the fan mountings in their air cooling systems. Formerly this structure comprised flat bar arms bolted to cast iron plate. The new construction was worked out first of all to improve the appearance and provide a satisfactory surface for high lacquer finish. A second result is that the round tubing reduces wind resistance and turbulence.



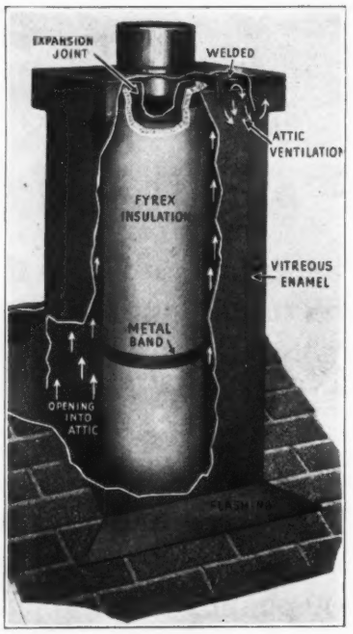
This mounting utilizes a welded steel tubing, ¾, 1 or 1¼-in. outside diameter, by 0.065-inch wall, with the tube ends flanged and spot welded to the sheet steel front plate and at the center to the bearing spacer box. The spacer box is cubical in form, constructed from two steel stampings placed face to face and welded together. The flanged tubes are welded on the flat portions, which give a very rigid and efficient structure.

The tubular structure is lighter. Round tube also has a higher torsional value and reduces vibration.

◆

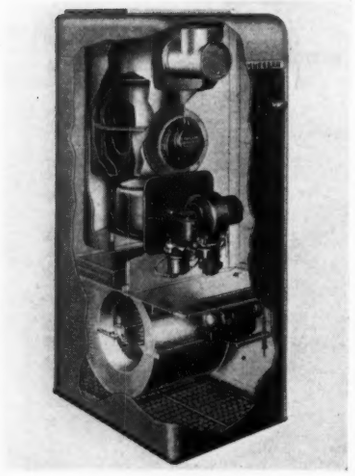
●173—Vitroliner Chimney

Condensation Engineering Corporation, 2515 Archer Avenue, Chicago, announces the Vitroliner chimney in connection with the Vitroliner system of outlet and vent piping for low-cost housing projects.



The Vitroliner chimney has welded flashing incorporated in the construction of the chimney—the flashing furnished to any roof angles in lots of 25 or more.

Vitroliner chimneys are made of Armco Iron, heavy-gauge enameling stock with special enamel finish. Fyrex insulation extends through the chimney as shown. The chimneys can be furnished in dark blue or neutral brown, vitreous enamel—also in brown or red brick finish.



174—Oil-Fired Conditioner

L. J. Mueller Furnace Company, 2005 W. Oklahoma Ave., Milwaukee, announces the introduction of two new oil-fired winter air conditioners, Series "OVP" and the Series "OHP."

The Series "OVP" is a vertical type unit with a maximum BTU capacity at bonnet of 80,000.

The entire unit is completely enclosed within a green crinkle lacquered cabinet with ample doors for access to enclose controls, burner, flue outlet, fan and motor.

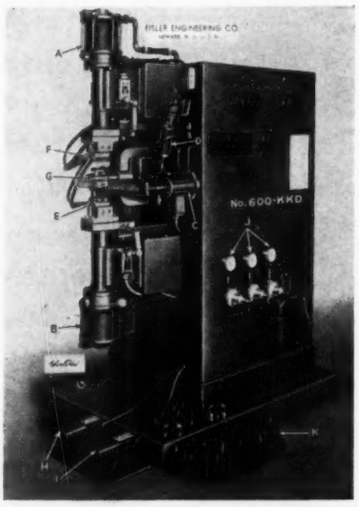
The Series "OHP" is a horizontal type unit having the same capacity but has all controls and burner exposed. This unit is finished in green crinkle lacquer.

Both are equipped with a Mueller mechanical draft type vaporizing oil burner.

◆

175—Projection Spot Welder

The Eisler Engineering Company, Inc., Newark, N. J., has recently placed on the market a special air-operated projection spot welding machine No. 600-KKD. This machine is arranged with special welding jigs and fixtures for welding fins to steel tubing. There are 56 points of heat control.



On defense work...

give 'em a job that will last

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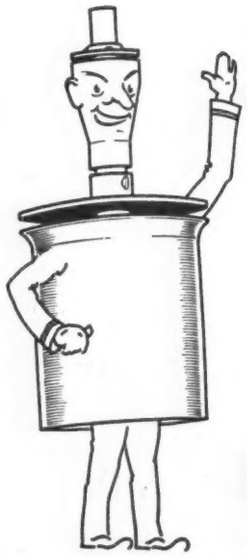
BETH-CU-LOY GALVANIZED STEEL SHEETS

Sheet metal work on defense jobs—whether housing or industrial expansion—deserves the protection of rust-resisting Beth-Cu-Loy Galvanized Steel Sheets. Doubly guarded against corrosion by a tight coating of zinc plus 0.20 to 0.30 per cent copper added to the steel itself, Beth-Cu-Loy Sheets are good for longer life. Yet the added cost is only a few cents more per sheet. When you figure on defense work, include Beth-Cu-Loy in your plans. You'll find these extra-durable sheets easy to work as well as economical.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

You Can't Beat



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as a source of supply for —

GOOD BURNERS

32 DIFFERENT TYPES

SERIES "V" BURNER
Pre-Mix Type—absolutely noiseless especially good for boiler installations in churches, schools, and apartments.

SERIES "R" BURNER
Refractory Type — especially good for installing in boilers having very low draft and small combustion space.

SERIES "S" BURNER
Popular Zink Star Type—simple, sturdy, and efficient—especially good for installations in power boilers.

CONVERSION FURNACE BURNERS
Luminous Flame Type — fits 98% of all domestic furnaces—tested, approved, efficient and economical.

JOHN ZINK FLOOR FURNACES
Made in three sizes — 25,000, 50,000, and 68,000 B.t.u./hr.

—UNIT HEATERS—

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Chicago, Ill.—7309 E. End
New York City—342 Madison Ave.
Dallas, Texas—3412 Ross Ave.
Houston, Texas—5634 Lawndale

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on page 88.

211—Furnace Pipe and Fittings

Milcor Steel Company, Milwaukee, is distributing a 56-page spirally bound catalog, covering Milcor furnace pipe, gravity and forced air fittings, stove pipe and elbows. The book is indexed—double pipe and fittings; tin and galvanized pipe, elbows and accessories; furnace accessories and heat regulators; single pipe and fittings; return air fittings; registers, faces and borders; stove pipe and elbows; and miscellaneous heaters, bake ovens, coal hods, drum ovens, fire shovels, forced air pipe and fittings and ventilators.

The items are illustrated and data includes the various sizes available and their price.

◆

212—Air Conditioning

Air Conditioning by John T. Schaefer is Monograph No. 34 of Vocational and Professional Monographs published by Bellman Publishing Company, Inc., 6 Park Street, Boston—Price 50c.

This monograph was written by John T. Schaefer, of the Air Conditioning and Commercial Refrigeration Department of General Electric Company, Bloomfield, New Jersey, and has been designed to supply personal qualifications required for engaging in the work, scholastic training needed, complete analysis of employment opportunities, remuneration received, chances for advancement, frank statement of advantages and disadvantages, with possibilities for both men and women.

◆

213—Plan to Increase Fall Profits

Research Products Corporation, 1011 East Washington Avenue, Milwaukee, makers of Research air filters, offers dealers a complete program for fall check-up business building—a double program to increase present profits and to establish the contractor as the correct source of maintenance work on heating and air conditioning equipment.

The plan operates on the obvious fact that once the heating and air conditioning man gets into the heating plant, he can recommend needed upkeep work which will make money for him, and by basing the approach to the customer on filter replacement, the contractor can be sure of making money even on his initial call. Proper service records, compiled now on the basis of filter replacement calls can be insurance against future work-shortages.

Material offered by the company in its fall check-up kit includes direct-mail cards to the consumer, newspaper ads, customer reminder cards, furnace stickers, illustrated folders, and window streamers; also service record cards, giving the contractor a simple easy method to keep track of his service customers.

◆

214—Draft—What, Where, How, Why?

The Hays Corporation, Michigan City, Indiana, offers publication No. 41-472—"Draft—What, Where, How Why?" by W. H. Pugsley, manager of Engineering. There are 20 pages telling what draft is, where found, how measured, and why it is important. Gages to suit different requirements are pictured and described.

◆

Consumer Literature

Panel Control Boards—Homer Furnace & Foundry Corporation, Coldwater, Michigan, has prepared for consumer study control arrangements to suit different conditions—each control designed for a specific purpose and the various arrangements portrayed so that the home owner can decide what control group best suits. Coupon No. 215.

You Can Afford Today's Automatic Heating with Stokerator—is the title of an envelope stuffer being distributed by Northern Steel & Stoker Corp., Peoria, Illinois. Coupon No. 216.

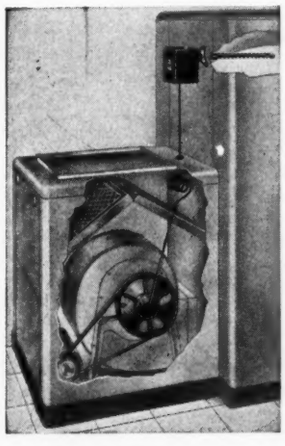
How to get some Quick Easy PROFITS —and lots of Good Will

ASK home owners who have forced air heating if they are annoyed by blower starting noise, chilly blasts when the blower starts, "cold 70", cold drafts, or other difficulties due to lack of efficient blower speed control. Then tell them how you can, at moderate cost, banish all their blower operating troubles and assure real COMFORT heating by installing a

MASTER BLOWERTROL
Thermostatic **CONTROL**

You have a good chance to make a profitable volume of sales on this equipment, especially if you talk it as a SERVICE to your customers. Each installation will make such a noticeable and pleasing difference in heating results that it's sure to make a friend and booster for your business.

BLOWERTROL *gradually* increases and decreases blower speed in direct ratio to the bonnet temperature and does it with the conventional single speed motor already on the job. It is automatic and quiet in operation, simple in design, carefully constructed, *dependable!* Moderate in cost and adaptable to any new or old forced-air heating system using a centrifugal blower, regardless of fuel.



WRITE FOR BULLETIN
giving full details of construction and operation

WHITE Manufacturing Co.
2360 University Avenue St. Paul, Minn.

Monogram's
"Trouble-Free" Automatic Oil Burning Furnaces Offer You Greater Profits

This Popular Unit Gets You the Small House Heating Work » »

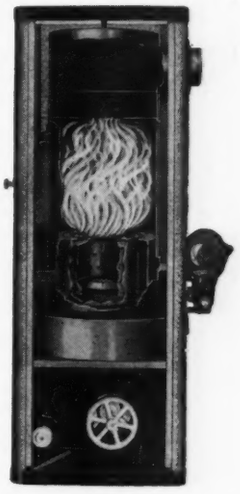
Model 102

The MONOGRAM Upright full forced air conditioning here illustrated was designed for the small home for utility room service. Hundreds in use assure clean helpful humidified warm air at a minimum cost.

Especially Designed for Utility Room Service

Check into the Famous MONOGRAM Vaporizing Burner.

You owe it to yourself to get our 24-page illustrated catalogue, descriptive of these MONOGRAM furnaces and giving you a complete story of the sensational "trouble free" vaporized "MONOGRAM" burner which gives you a gas light flame with no service headaches.



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44th Year of Quality
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IMMEDIATE DELIVERIES

usAIRco **BLOWER FILTER** *Units*

YOU can order usAIRco Blower-Filter Units today with assurance of getting IMMEDIATE shipment. But if you expect to get your share of this season's furnace conversion business, *immediate action is advisable.*

Today usAIRco is taking care of its *two* best customers, Uncle Sam and you, without impairing service to either. Tomorrow, with defense needs growing rapidly and material shortages becoming more acute, usAIRco may have only *one* customer — and you know who!

So take advantage of the present situation while it is still favorable to both of you. Order now while you can still assure your customers of getting *"The Nation's Biggest Blower-Filter Value."*

And the delivery and price situation is also favorable on other usAIRco Heating, Cooling, Ventilating and Air Conditioning Equipment. Write us on any of your needs in these lines *today*.

UNITED STATES AIR CONDITIONING CORPORATION

NORTHWESTERN TERMINAL · MINNEAPOLIS, MINN.

New Literature . . . .

For your convenience in obtaining copies of new Literature use the coupon on this page.

217—Welding Electrodes and Accessories

Hobart Brothers Company, Box EW-79, Troy, Ohio, offers a revised, twenty-page handbook of welding electrodes and accessories free of charge.

◆

218—Four New Savings

The Rudy Furnace Company, Dowagiac, Michigan, is distributing a 4-page folder on Rudy blowers, which gives data and description of Rudy forced air units.

Rudy blowers have been changed to permit top mounting of the motor, safeguarding the unit against flooded basements. Specification changes, revised output ratings and one new size (No. ¾) are shown.

◆

219—Oil Furnace for Defense Homes

Norge Heating and Conditioning Division Borg-Warner Corporation, 12345 Kercheval Ave., Detroit, is distributing Form No. H-17-41-8 covering their new Norge Model OD-70 designed especially for defense homes. This is a forced warm-air furnace with completely automatic controls and automatic draft, rated at 70,000 Btu bonnet output.

◆

220—"Simplified" Are Welding

Hobard Brothers Company, Troy, Ohio, offers a new 38-page catalog describing the complete line of Hobart "Simplified" arc welders and accessories. The 1,000 combinations of voltage and current with multi-range dual control are explained. Remote control, stabilization at all settings, polarity control, the various models available, and electrodes obtainable are subjects covered.

◆

221—Angle and Circle Meters

Interstate Sales Company, 1123 Broadway, New York City, offers a 6-page folder on the Wolfe angle meter and the Wolfe circle meter—with technical and educational matter. The material is copyrighted.

The Wolfe angle meter solves the problem of templets for the welding and sheet metal industries. It is a practical "slide rule" for the rapid laying out of angles directly on pipe or sheet metal.

The Wolfe circle meter gives instantaneous readings of diameters and circumferences of any circle up to 72 inches in diameter in steps of ⅛ inch or smaller. All readings are in fractions of an inch.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature."

(Circle numbers in which you are interested):

166	167	168	169	170	171	172
173	174	175				
211	212	213	214	215	216	217
218	219	220	221			

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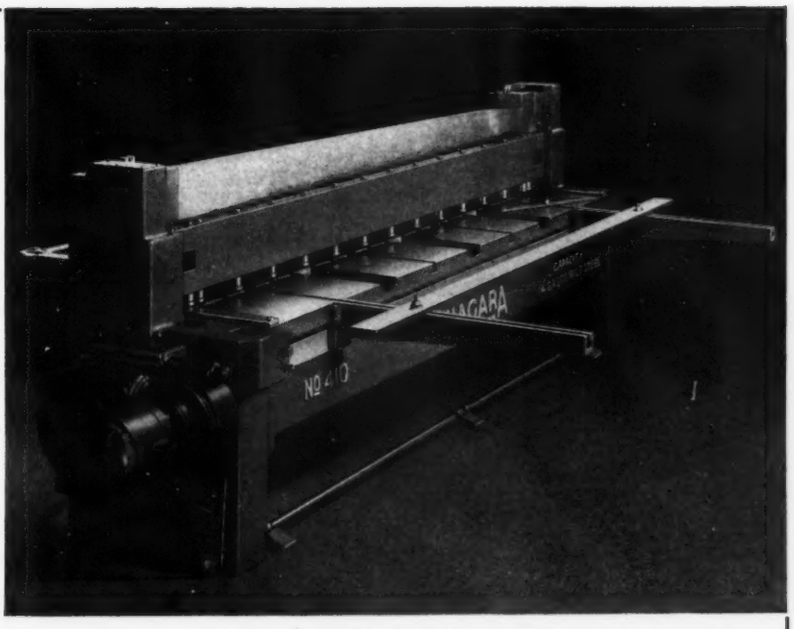
Are you Manufacturer——Jobber——Dealer——

The New

NIAGARA

SERIES No. 4 POWER SQUARING SHEARS



Capacities: 12 to 16 gage; 4 to 12 foot lengths

Accuracy, heretofore unattainable is offered by this new series of Niagara Power Squaring Shears. They cut sheared edges that are straight to within a very few thousandths of an inch. Narrow strips, accurate to gage setting and parallel within close limits are produced without camber or curl.

High production of 75 strokes per minute is made possible because of their fast operating speed, instant engagement of the Niagara Sleeve Clutch, quick release of holddown, and convenient operation. Motor is direct connected.

The drive, including flywheel, gearing, clutch and eccentrics, is enclosed and operates in a bath of oil. A new detent device requiring no adjustment or attention replaces the customary friction brake.

Standard equipment includes ball bearing, self-measuring, parallel back gage, front, side and bevel gages, and four-edge, solid tool, steel knives.

NIAGARA MACHINE & TOOL WORKS, Buffalo, N.Y.

Branches: Leader Building, Cleveland; General Motors Building, Detroit; 50 Church St., New York

The JOHNSON AQULUX 150

COMPLETELY AUTOMATIC DOMESTIC HOT WATER AND HOT WATER HEAT

Increased payrolls and the building activity resulting from defense work have stimulated the demand for dependable, economical heating. Outmoded, wasteful methods of heating are being discarded in favor of the more efficient and convenient types using low-cost fuel oil.

YOU can sell AQULUX 150 to this GROWING MARKET

Specify the Johnson AQULUX 150 to supply hot water for large homes, apartments and hotels, or to furnish heat for 6 to 8-room homes. Size overall—24" diameter by 66" height; 45 gallon capacity. Output per hour—150,000 BTU, or recovery capacity of 180 gallons per hour at 100° F. temperature rise—more hot water than the average family will ever need.

Specifications and operating data on the AQULUX 150 and the smaller AQULUX 85 are available upon request. Also, complete information about other members of the famous Johnson line, including the SELECTAIR, AEROLUX and the ever-popular ECONOLUX. See our nearest authorized dealer or write directly to

S. T. JOHNSON CO. 940 Arlington Ave., Oakland, Calif.

401 N. Broad St., Philadelphia, Pa.

With the Manufacturers . .

Airtemp Correspondence Courses Offered

D. W. Russell, sales-minded president of the Airtemp Division, Chrysler Corporation, Dayton, Ohio, has established the Chrysler Airtemp Air-Conditioning Institute at the factory, offering all Airtemp salesmen a complete correspondence sales course in air conditioning, both cooling and heating.

Graduates are awarded diplomas certifying that they are "Air-Conditioning Specialists" or "Heating Specialists," according to the course completed. They are also supplied with a pocket replica of the diploma and with personal business cards carrying their newly earned title.

The course on cooling is divided into eight lessons. Each consists of four or six illustrated pages discussing one important phase of the business. The course in heating is divided into 12 lessons.

Each lesson is accompanied by a quiz sheet which the salesman answers and returns to the Chrysler Airtemp Institute in Dayton. There, each salesman's quiz is individually studied and graded. If the salesman's answers indicate any misunderstanding, a special letter clarifying the points is written him. The first lesson is sent to the salesman immediately upon enrollment and remaining lessons go out as rapidly as he returns the quiz sheet covering the previous lesson. Both courses are designed to be completed in eight weeks.

◆

Thomas E. Henry

The Henry Furnace & Foundry Co., Cleveland, regrets to announce the death on October 3rd of its founder, Thomas E. Henry, age 73.

Mr. Henry started in the register business in Cleveland in 1898 associated with Charles Scheible. Not long after, the firm of Henry & Scheible went into the manufacture of pipe and fittings along with registers; and from there they began in a very small way to manufacture warm air furnaces. In later years the firm name was changed to T. E. Henry Furnace Co., then to Henry-Miller Foundry Co. and finally to The Henry Furnace & Foundry Co.

Mr. Henry was chairman of the Board of The Henry Furnace & Foundry Co. He also took an active part in the business until about a year ago when illness caused him to retire.

◆

Edward A. Wilson, Sr.

Edward A. Wilson, Sr., 77, secretary of Grant Wilson, Inc., 4101 W. Taylor Street, Chicago, passed away on July 27. Mr. Wilson was in the asbestos business for 47 years. He was connected with the First State Bank of Porter, Indiana, and lived in Chesterton, Indiana.

Mr. Wilson leaves two daughters and three sons—Grant V. of Chicago, Edward A. Wilson, Jr., with the company in Detroit, and Ladd L., connected with Sall Mountain Company, Chicago.

◆

Personnel Appointments

E. I. Boardman—appointed president of **Armstrong Furnace Company**, Columbus, Ohio, by D. W. Norris to succeed Earl W. Sidwell, deceased. Mr. Boardman was sales manager for Richardson & Boynton for the past ten years, and prior to that spent eight years in the boiler division of American Radiator Company.

D. H. Kinnan will design heating equipment for Armstrong Furnace Company customers, according to D. W. Norris, owner of the Armstrong Furnace Company.

◆

Philip Linne—Appointed sales promotion manager of **Owens-Corning Fiberglas Corporation**, Toledo, Ohio, effective September 9.

W. D. Thackeray—named advertising manager of **Owens-Corning Fiberglas Corporation**, Toledo, to succeed Philip Linne.

Here's How You Can MAKE MORE MONEY—Now!

Use the complete—*FREE*

RESEARCH AIR FILTER

Fall Check-Up Kit!

- *FREE MAILINGS*
- *FREE FOLDERS*
- *FREE NEWSPAPER ADS*
- *FREE WINDOW STREAMERS*

RESEARCH PRODUCTS CORP. RP MADISON, WIS.

Here's a complete sales-builder kit on Fall Check-Up business . . . planned to make money for you in two ways:

1—*On filter sales* . . . for Research Filters give you a longer profit margin;

2—*On repair business* . . . for this plan gives you more chances to estimate—more business to sell.

Cash in on this great fall profit plan. For full details on the Research Fall Check-Up Kit, mail the coupon today!

MAIL THIS TODAY!

Research Products Corp., Madison, Wisconsin

Send me full details on your fall-check-up sales-builder plan.

Name: .....

Address: .....

City .....State.....

RESEARCH PRODUCTS CORP.

MADISON - WISCONSIN

★ ★ ★ ★ ★

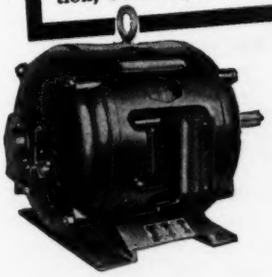
Is your equipment being used in DEFENSE INDUSTRIES, ARMY CANTONMENTS, NAVAL STATIONS, SHIPS?... If so, you need Dependable

WAGNER MOTORS

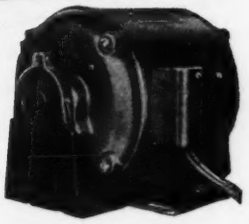
Our country has sounded the call for equipment and machinery for national defense. Equipment manufacturers everywhere are answering that call—refrigeration equipment manufacturers are no exception. Already thousands of refrigerating units are doing their part in the defense program—a large percentage of these units are powered by Wagner motors, and for good reasons, too. The name Wagner means

1. An established reputation for building efficient, dependable motors.
2. A complete line—the right motor for every type of equipment, and all service conditions.
3. Quick shipments to handle rush defense orders.
4. Large plant capacity to handle any order, large or small.
5. Fifty years of manufacturing experience.
6. Convenient service facilities through 25 branches.

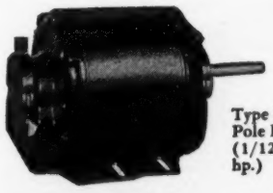
Six good reasons why you should look to Wagner for motors for all your defense production. Wagner Electric Corporation, 6400 Plymouth Avenue, Saint Louis, Mo., U. S. A.



Type RP, Squirrel-Cage polyphase motors. (1/6 to 400 hp.)



Type RA, Repulsion-Start-Induction single-phase motors. (1/8 to 15 hp.)



Type M, Shaded-Pole Fan motors. (1/125 to 1/30 hp.)

Type RK, Capacitor-Start Induction-Run motors. (1/8 to 3/4 hp.)

M-41-22A

WAGNER ELECTRIC CORPORATION 50TH ANNIVERSARY 1891 • 1941 ST. LOUIS, MO.

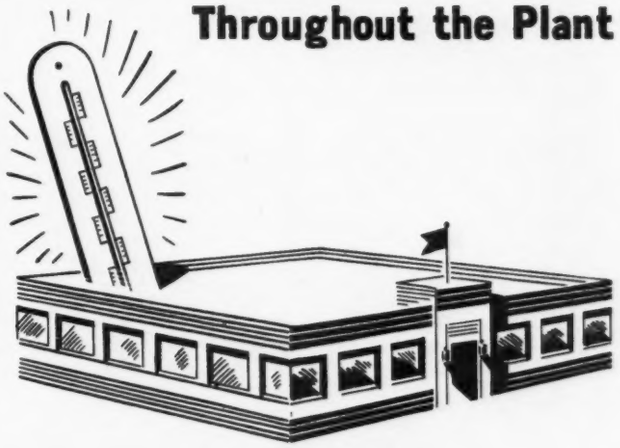
SEND FOR YOUR FREE COPIES OF BULLETINS MU-177 AND MU-182

Wagner Electric

This year Wagner celebrates its fiftieth year of service to industry and the home—as a manufacturer of motors, transformers, and fans of the highest quality.

EVEN TEMPERATURE

Throughout the Plant



DIRECTHERM Heater . .

improves conditions for high speed production.

Directherm takes the cold air from the floor and distributes the heat evenly throughout the room up to 200 feet distance.

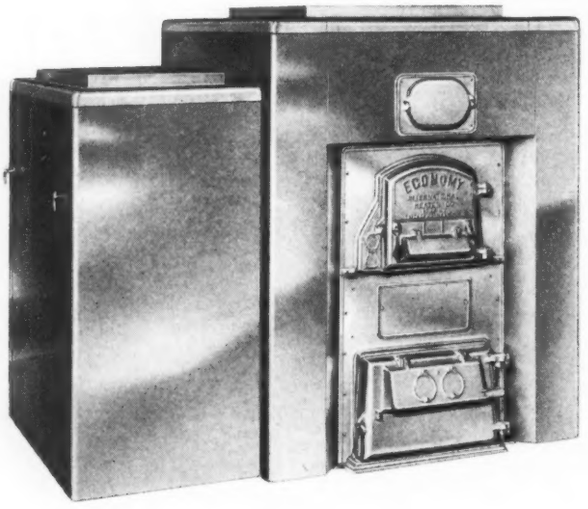
When your men feel comfortable, they work faster. This means a lot in these times of rush production.

Write for bulletin 305 A. It gives detailed information about Directherm — the direct-fired Unit Heater in 6 sizes (300,000 - 1,700,000 B.T.U.) for oil, gas or coal.

AIRTHERM MANUFACTURING COMPANY

706 S. SPRING AVE. ST. LOUIS, MO.

INTERNATIONAL PRESENTS



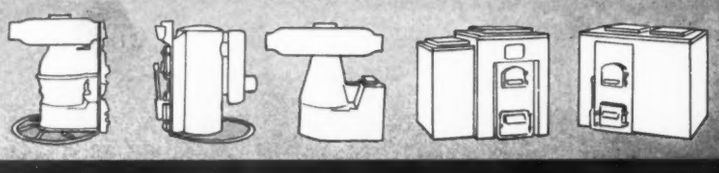
ECONOMY JACKETED AIR CONDITIONING UNIT

New beauty—new economy—new comfort in the Economy Jacketed Air Conditioning Unit. Made by specialists in heating equipment for over 100 years. Central heating unit tried and proven over a period of years and protected by our Ten Year Maintenance Agreement. Rated according to national code. Quiet, powerful blower. Available in round or square case. Variety of humidifiers and controls to choose from. While designed primarily for solid fuel, can be easily adjusted to the use of oil and stoker. Jacket design is such that blower may be installed on either side or the back—whichever is better for your installation.

Write to Dept. A-10 for literature on the Economy Jacketed Air Conditioning Unit and other proven International Products.

INTERNATIONAL HEATER COMPANY
UTICA, N.Y., U.S.A.

WESTERN OFFICE AND WAREHOUSE • 1933 WENTWORTH AVE., CHICAGO, ILL.
NEW ENGLAND OFFICE AND WAREHOUSE • 110 CHESTNUT ST., NASHUA, N. H.
STOCKS CARRIED WITH WHOLESALERS IN ALL PRINCIPAL CITIES



News Items . . . . . .

Stoker Sales Increase

Factory sales of mechanical stokers reported to the Bureau of the Census, Department of Commerce, for the first seven months of 1941 total 93,757 of all sizes and types of stokers, compared with 54,307 in the corresponding months of 1940—an increase of 72.64 percent, according to the Committee of Ten, 307 N. Michigan Ave., Chicago.

◆

Calvin F. Droegkamp Forms Company

Calvin F. Droegkamp, formerly associated with his father in the Droegkamp Furnace Company, Milwaukee, has started a new business under the name of Calvin Droegkamp Heating Company, located at 3814 W. Center Street, Milwaukee, Wisconsin.

◆

Anthracite Stoker Course

Under the auspices of the Commonwealth of Massachusetts, Department of Education, Division of University Extension, an Anthracite stoker course will be presented at Massachusetts Institute of Technology, Cambridge, over a period of sixteen weeks beginning October 16th. Allen H. Bearse, Jr., New England Manager for Anthracite Industries, Inc., will handle the lectures.

The cost is $9.00 and further information can be obtained from the Division of University Extension, 200 Newberry Street, Boston, Mass.

Actual subjects to be discussed are:

Session I—Type and Operating Characteristics of Anthracite Stokers.
Session II—Basic Principles of Determining and Controlling Stoker Draft.
Session III—Combustion of Fuel in a Stoker Retort.
Session IV—Adaptability of Boilers and Furnaces to Stoker Firing.
Session V—Methods of Heating.
Session VI—The Heating Plant Survey and Its Relation to Stoker Installation.
Session VII—Fundamentals Governing the Selection or Sizing of Stokers.
Session VIII—Principles of Stoker Installation.
Session IX—Principles of Stoker Installation (Cont'd).
Session X—Baffles.
Session XI—Baffles.
Session XII—Stoker Controls.
Session XIII—Modern Coal Bin and Ashpit Design and Construction.
Session XIV—Commercial Stokers.
Session XV—Stoker Service.

◆

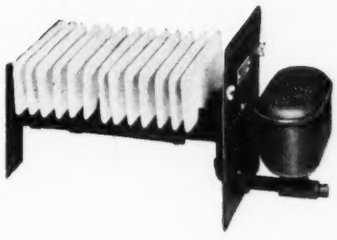
Technical Advisory Committee on Fuels

The Technical Advisory Committee on Solid Fuels of the American Society of Heating and Ventilating Engineers has been changed to the "Technical Advisory Committee on Fuels." The new membership list of this committee is as follows:

R. M. Conner, director, American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland.
R. S. Dill, National Bureau of Standards, Washington, D. C.
A. C. Fieldner, chief, Technologic Branch, Bureau of Mines, Washington, D. C.
L. N. Hunter, vice president, National Radiator Co., Johnstown, Pa.
S. Konzo, special research associate professor, 1108 West Stoughton Street, Urbana, Illinois.
W. M. Myler, Jr., chief engineer, Janitrol Heating Department, Surface Combustion Corp., 400 Dublin Avenue, Columbus, Ohio.
H. J. Rose, senior industrial fellow, Mellon Institute, Pittsburgh.
C. E. Shaffer, Research Department, Koppers Co., Kearny, N. J.
T. H. Smoot, general manager, Fluid Heat Division, Anchor Post Fence Co., Eastern Avenue and Kane Street, Baltimore.
Ralph A. Sherman, supervisor, Fuels Division, Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio (chairman).
R. K. Thulman, mechanical engineer, Technical Division, Federal Housing Administration, Washington, D. C.
E. C. Webb, engineering service manager, Iron Fireman Mfg. Co., 3170 West 106th Street, Cleveland.

HERE'S A BARGAIN!

700 square inches of EVAPORATING AREA



Order a sample unit from your jobber today.

FOR ONLY $14.75 LIST F. O. B. DETROIT

Again Skuttle leads the field by offering you more evaporating area for less money! This Skuttle Series 300 humidifier complete with the new all glass Vapoglas evaporating plates gives you more evaporation per dollar.

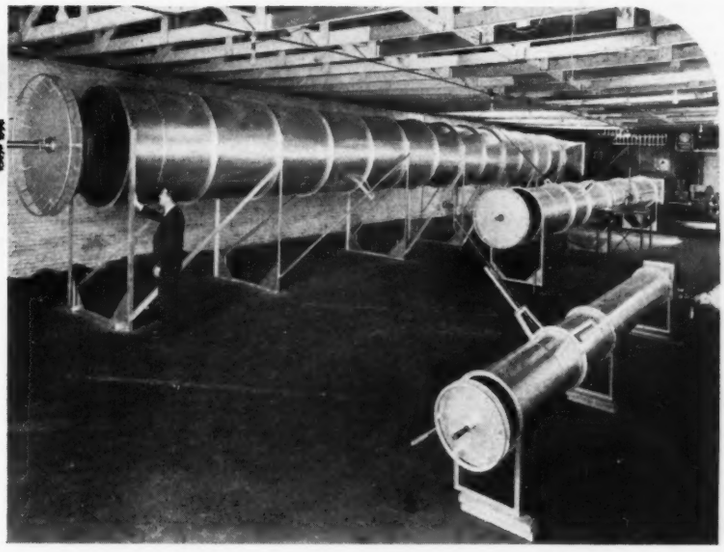
SKUTTLE *Sales* COMPANY

Air-Conditioning Equipment

1015 FRANKLIN ST. • • • DETROIT, MICHIGAN

Depend on UTILITY

For completely modern, gas-fired heating equipment, that is compact in design, efficient in operation, attractive in appearance and dependable in service.



Blowers and fans used in Utility Heating Equipment are all tested in accordance with the A.S.H.V.E. Code, in the extensive laboratories of Utility Fan Corporation. The same careful engineering extends to all design and production of Utility Heating Equipment.

UTILITY FAN CORPORATION

4851 SO. ALAMEDA STREET • LOS ANGELES, CALIFORNIA

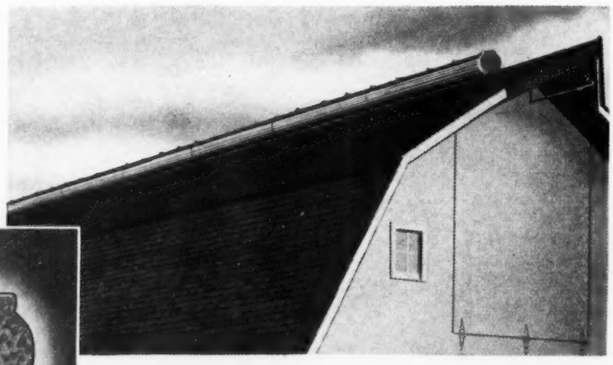
MANUFACTURERS OF FORCED-AIR BASEMENT AND CLOSET FURNACES, FLOOR AND DUAL REGISTER FURNACES, CIRCULATING HEATERS AND UNIT HEATERS

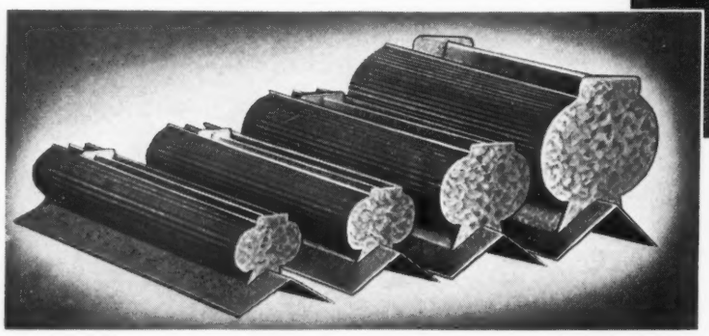
KLAUER *Ridgolator* THE TRIPLE DUTY VENTILATOR

Pat. No. 2,232,027 Design Pat. No. 121,410

FOR FACTORIES, HOMES, BARNS, CORN CRIBS, GRANARIES, HOG AND POULTRY HOUSES

No matter which way the wind is blowing, this amazing new Klauer "Ridgolator" will operate efficiently, due to its *exclusive, patented* longitudinal and cross baffles! Remarkably strong . . . storm-proof . . . bird-proof . . . decorative . . as easily installed as a large ridge roll!





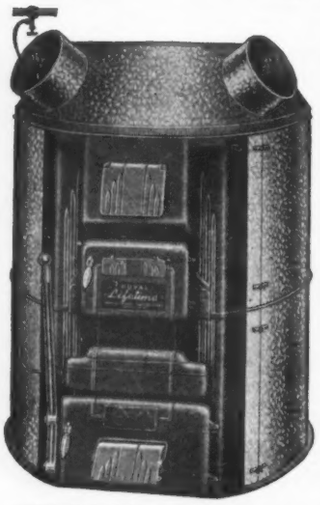
MORE VENTILATION PER DOLLAR OF COST

Original cost is lower than cupola ventilators . . . installation costs are reduced 50% . . . freight costs are knocked down by one-third! Investigate this sensational new money-maker!

SINCE 1870 *Klauer* MANUFACTURING CO., DUBUQUE, IOWA

- ★ Roofs and Box Gutters, Valleys, Flashing
- ★ Sheet Steel, Corrugated Sheets
- ★ Skylights, Stock Tanks
- ★ Ventilators and Cupolas
- ★ Eaves Trough, Conductor Pipe and Trimmings
- ★ Metal Ceiling, Pressed Siding, Rolled Roofing
- ★ Metal Lath and Corners
- ★ Ridging, Corners, Battens, Shingles

Here They Are—Come and Get 'em!



LIFETIME Warm Air Furnace

Anticipating a possible shortage of materials and finished heating equipment, we have built up an inventory of Warm Air Furnaces. If you need furnaces now or will need them later, get in touch with us at once.

A COMPLETE LINE

The Hart & Crouse Corporation offers a full line of modern Warm Air Furnaces and Air Conditioning Units, including the 900 Series which is a truly competitive line. Made by one of the largest and oldest manufacturers of heating equipment, with a capacity to produce 25,000 furnaces a year. Modern assembly line methods assure expert workmanship at low cost of operation, and the name Royal stands for higher quality.

The ROYAL 900 Series Furnace

HART & CROUSE CORPORATION

301 TURNER STREET UTICA, NEW YORK

Konzo Last Squeak in the Btu

(*Continued from page* 50)

a casual glance at the equipment. He wants facts and figures. Simple and relatively inexpensive instruments are now available to check draft, flue gas temperature, and CO_2. The total cost will be about $30—$35. Actual performance data will indicate whether any changes made have been beneficial or not. (See Fig. 4.)

1. Insert the tube from the portable draft gage into the combustion chamber of the furnace and out of the path of the flames. The draft should be about 0.02 inches. If a draft reading is taken at the smoke outlet of the furnace the draft should be between 0.04 and 0.06 in. Vaporizing (or pot) burners usually require more draft. See manufacturer's directions as to the required draft. (See Fig. 1.)
2. Insert the flue gas thermometer at the smoke outlet of the furnace. If a check draft opening is built into the furnace ahead of the smoke outlet, such openings should be temporarily closed while taking flue gas temperatures and CO_2. Jot down the value of flue gas temperature taken at least 15 minutes after the burner has been turned on.
3. Insert the gas sampling tube from the CO_2 indicator and measure the CO_2 content of the flue gases. Take a second sample as a check against the first reading. Jot this value down. Refer to Tables 1 to 4 and obtain the percentage loss of heat in the flue gases. The specifications in Commercial Standards CS 75-39 call for a minimum CO_2 of 8% for oil burners. For proper performance, vaporizing (or pot) burners, and rotary burners may require a minimum value of from 10 to 12 per cent CO_2. (See Fig. 2.)
4. If possible determine the *oil* input rate and oil pressure.

Up to this point the contractor should not have tried to adjust anything. He has now a complete record of the burner performance as first inspected.

What Can the Contractor Do?

From the preceding survey the steps required to "tune up" the burner may be obvious. In general the following steps may be necessary:

1. Clean the burner nozzle, the oil strainer and the electrodes. Oil the motor and fan bearings.
2. Clean the stack safety switch and level it in position.

Mercoid
Offers a Simple Means for Saving Fuel Without Sacrificing Comfort

MERCOID SENSATHERM
DAY—NIGHT TEMPERATURE CONTROL

The National Defense Emergency makes it necessary to cut corners in every direction on waste. All fuels in particular must be conserved ★ The Mercoid Day-Night Sensatherm fits perfectly into this conservation program ★ This thermostat permits the lowering of the room temperature during the sleeping hours and automatically causes the heating plant to restore the temperature to the desired day setting, thereby saving fuel during the lower operating temperature ★ An excellent feature about this simple Day-Night temperature control over the clock type thermostat is that you control it—it does not control you. It is wound and set like a watch when you are ready to retire. According to American habits, there is considerable variance in bed time hours. With the Mercoid Day-Night Sensatherm there is no chance of subjecting yourself and company to a chill if you happen to be up later than usual.

An All Around Saving

1. The low price of this fine instrument will appeal to every home-owner—it costs less than one third the price of some combination clock type thermostats.
2. The clock mechanism only operates while you sleep and consumes no current. It will give many more years of service because of this feature.
3. There is less installation expense, as there are but two simple wire connections to the hook-up, the same as is required by the regular Mercoid Sensatherm. Thus, you can replace present thermostats with minimum of effort and expense.

You will be pleased with its small size, neat appearance and dependable performance.

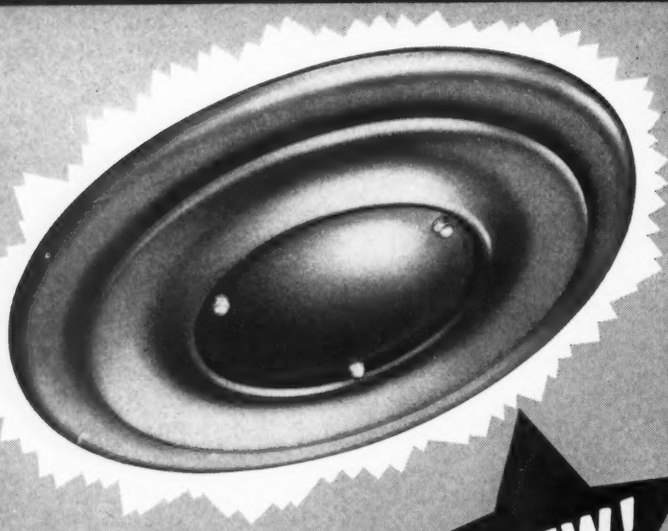
Hermetically Sealed Magnetic Type Mercury Switch Used

These switches are immune to dust, dirt or corrosion—a common cause for trouble. You have the advantage of this desirable feature at no additional cost. Write for descriptive circular No. D-2.

THE MERCOID CORPORATION
4207 BELMONT AVENUE • CHICAGO, ILLINOIS

MERCOID
THE EMBLEM OF CRAFTSMANSHIP IN FINE AUTOMATIC CONTROL INSTRUMENTS

BY THE MAKERS OF UNI-FLO GRILLES AND REGISTERS



venturi-flo

AIR DIFFUSER

RECESSED MODEL

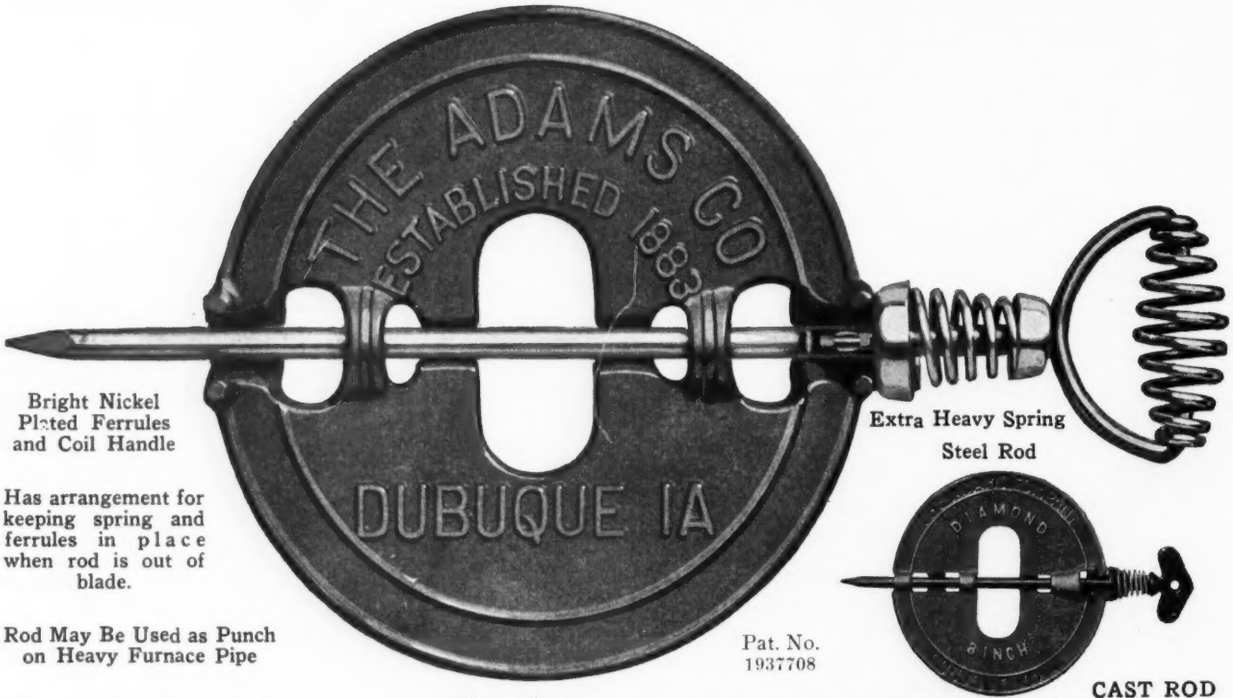
NEW!

- Deflector form of ceiling member minimizes streaking by giving the air stream a slight downward direction.
- Overall diameter is approximately 1/3 smaller than other models. For example, 10" throat size is 20" overall.
- Modification in design results in lower pressure drop through the diffuser.
- A wider range of sizes is now available.

BARBER B-C COLMAN

For specifications of all UNI-FLO and VENTURI-FLO units, write for descriptive literature. Complete data also in SWEET'S CATALOG FILE (Architectural).

1226 ROCK ST. **BARBER-COLMAN COMPANY** ROCKFORD, ILL.



Bright Nickel Plated Ferrules and Coil Handle

Has arrangement for keeping spring and ferrules in place when rod is out of blade.

Rod May Be Used as Punch on Heavy Furnace Pipe

Sharp Piercing Point with Four Cutting Edges

Heavy Cast Reversible Blade

Pat. No. 1937708

Buy ADAMS Known Quality

Extra Heavy Spring Steel Rod

CAST ROD
Desirable when subject to extreme heat.

DIAMOND SMOKE PIPE DAMPER

Manufactured by THE ADAMS COMPANY Dubuque, Iowa, U. S. A.
ESTABLISHED 1883

3. Clean the furnace of soot accumulations by scraping or burning.
4. Adjust the automatic balanced damper to give proper draft.
5. If the oil rate is too high, as is quite likely the case in burners installed many years ago, try reducing the oil rate. This will tend to reduce the flue gas temperature. In general one gallon of oil input will handle a heat loss from the house of roughly 80,000 B.t.u. per hr. A greatly oversized burner is not an economical burner.
6. Adjust the air input to the burner to give firstly a clean flame and secondly a reasonably good CO_2. Exceedingly low CO_2 may indicate that the furnace requires resetting and the plugging of all openings that lead to dilution of the flue gases.
7. If the flame is not properly shaped, a different nozzle may be required. In some cases, the refractory chamber may have to be made smaller, or a ledge built across the top.
8. If flue gas temperatures are still too high, say over 800° F., a larger furnace having more heating surface is recommended for use with the same burner. Efficient heat transmission requires any or all of the following features: a) large heating surfaces; b) effective heating surface in which the flue gases do not short-circuit through the furnace; c) high flue gas velocities; d) proper combustion; e) large amounts of circulating air over the outside of the heating surface, amounting to approximately 1000 c.f.m. for each gallon of oil input.
8. In conversion gas burners, firebrick are sometimes placed inside horizontal heating surfaces to force the flue gases to "scrub" the heating surfaces more effectively.
9. Make a final check of CO_2 and flue gas temperatures and, from the tables 1 to 4, determine the flue gas losses after all adjustments have been made.
10. The heating contractor should refer to the following sections of the "Yardstick for the Evaluation of a Forced Warm-Air Heating System" obtainable at 25 cents from the National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland, Ohio.

    Sections 102 to 105
    Sections 109 and 111
    Sections 202 and
    Section 506.

★ ATTENTION ★

HEATING, PLUMBING and SHEET METAL CONTRACTORS

Get your share of Defense Housing Business with this New Plan!

Here's news of a new plan—the Essick Plan for Contractors—designed to help you gat more heating and cooling business—to help you render added service in the National Emergency.

Your Government wants you to bid on all Army and Navy projects—wants you to bid on all residential heating and cooling in homes not exceeding $6000.00 per unit, in designated Defense Housing Areas.

That's plenty of potential business! But remember, it's fast-moving business and you'll need all the outside help you can get!

Here Are Three Valuable Aids for You

Army and Navy projects and Defense Housing are eligible for priority ratings, under most conditions, which creates a real problem for you. Therefore we have created the Essick Plan for Contractors . . . offering you three valuable aids.

1. To help you work out your priority problems, we offer you assistance based on months of study and research—a continuing service which we are rapidly expanding.

2. To help you locate projects carrying priority ratings . . . to help you obtain proper data and specifications, we offer you assistance based on reliable reports from key defense areas.

3. To help you bid successfully, we offer you heating and cooling equipment which meets necessary specifications, for example:

The Following ESSICK Products are being used on Defense Projects

ESSICK Air Coolers
ESSICK Forced Air Gas-Fired Furnaces
ESSICK Gravity Gas-Fired Furnaces
ESSICK Gas-Fired Floor Furnaces (Also Dual Heads)
ESSICK Oil-Burning Floor Furnaces

DIRECT FACTORY REPRESENTATIVES COVERING THIRTY-FIVE STATES, TO ASSIST YOU.

WIRE, PHONE OR SEND THIS COUPON TODAY!

Essick Mfg. Co., Dept. A, 1950 Santa Fe Ave., Los Angeles
Send me complete details on the Essick Plan for Helping Contractors.

Name .....

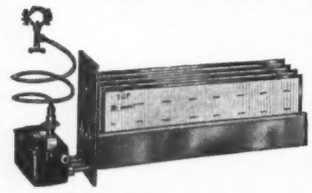
Address .....

City ..... State .....

It's HUMIDIFIER Time

NOW is the time to promote humidifier business . . . Doctors suggest correct home humidification for better health . . . Newspapers and magazines mention it incessantly . . . Home owners are indeed "Humidity Conscious" . . . everything is in your favor for easy sales. Take advantage of this unusual publicity which has created a tremendous market for humidifiers. Sell Maid-O'-Mist's complete line of humidifiers which deliver more humidity per dollar cost than any other type, and assure you of a satisfied customer for each installation. Below are some of the leaders . . . write for information on the complete line.

"CONVECTOR "AUTOMATIC HUMIDIFIER FOR WARM AIR FURNACES



No. 184 "Convector" Automatic Humidifier

Modern, streamlined to conform with today's vogue in furnace construction, and made in a variety of sizes to fit the largest or smallest furnace . . . Comes in single, double or four troughs . . . Can be mounted in the plenum or the hood, either straight or sloping . . . Does not restrict air flow . . . Automatic Water Feeder is approved by the National Plumbing Lab. . . . Humidifier is built of non-ferrous metals, is easily installed, and most efficient in operation.

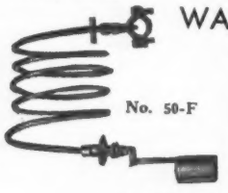
THERE'S PROFIT IN CONVERTING HAND FED HUMIDIFERS INTO AUTOMATIC JOBS

Maid-O'-Mist Automatic Water Feeders and Water Line Control Valves will transform out-moded hand fed humidifiers in furnaces into modern, automatic jobs, quickly and inexpensively . . . assuring you of an excellent profit and a finished installation of lasting efficiency.

No. 59-F

No. 59 F WATER BOY FEED VALVE

Compact, efficient, simple to install . . . Built entirely of non-ferrous metals, has National Plumbing Lab. seal of acceptance, comes complete ready for application with 6" of copper tubing and a quick hook-up saddle valve.



No. 50-F

WATER BOY MIDGET FEEDERS

For bucket or pan type humidifiers. Is 7" long over all. Will operate in water only 1" in depth. Adjustable. All non-ferrous metals. Comes complete with 6" of 1/4" O. D. copper tubing and a quick hook-up saddle valve.

ALSO MANY OTHER TYPES

Maid-O'-Mist also manufactures many other types of Midget Water Feeders. The No. 51 . . . No. 55 . . . No. 56 . . . No. 57 . . . all operate perfectly under any conditions. Each has its specified purpose and the one best suited for your use is included in this extensive line.

Write for Bulletin 701 for Complete Information

MAID-O'-MIST INC.

AUTOMATIC HUMIDIFIERS FOR ALL TYPES OF HEATING SYSTEMS

213 NORTH ABERDEEN STREET
CHICAGO ILLINOIS

Kruckman—Sub-Contracting

(*Continued from page* 44)

and his reorganization means new people, new offices, new expansion, and new ideas. With the best will in the world you cannot make a new organization work immediately. You have to put it together. And there are waste motions.

For instance, the other day Mr. Odlum called his first press conference. It was designed earnestly and honestly to tell the smaller business unit what it might expect and what was being done on its behalf. But by one of those fantastic flukes of fortune some one invited every kind of publication to that conference except those periodicals most intimately concerned with the business men vitally interested. The incident, insignificant in its way, is significant as an illustration of the fumbles and blunders that constantly delay action and understanding in the Capital.

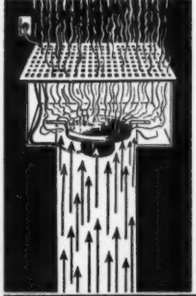
Some Priorities Tangles

It is estimated between 800,000 and 1,000,000 priority rating certificates have been issued to date. All but 100,000 are the automatic A ratings issued by the Army-Navy Munitions Board. The 100,000 were issued by the Priority Division itself. And, naturally, many of the 100,000 also are A ratings. You can easily understand why a Priority rating has become almost meaningless. Yet, if the supplier of raw materials does not obey a Priority rating certificate he may be fined many thousands of dollars and put in jail. Mr. Nelson only the other day announced the orders and ratings are mandatory and that he would enforce compliance.

COLD RUNS BANISHED!

WITH THE Furnace Man's Friend

THE VICTOR HEAT BOOSTER



This amazingly effective device not only boosts hot air into hard-to-heat rooms, it boosts profits into the pocket of the furnace man.

The Victor Booster needs only to be set in place, plugged into any electric outlet, and out pours a rich flow of hot air—not from an overfired furnace, but from an ordinary everyday fire. Two models, floor and wall. Liberal Discounts. Write today for detailed literature and prices.

VICTOR ELECTRIC PRODUCTS, Inc.
Dept. HB-7 2950 Robertson Ave. Cincinnati, Ohio

ASK YOUR JOBBER OR WRITE DIRECT

Obviously, Priorities are a mess. The Defense people know they are a mess, and the members of Congress openly call it a mess. It is Mr. Nelson's job to clean it up. He intends to introduce rationing. They will call it *allocation*, but it will be simon pure rationing. To make it work in the metals industries it has been proposed that the Metals Reserve Corporation, the subsidiary of RFC, shall expand its functions and buy ALL metals, as of the Government, and sell ALL metals to every one, every where, for every purpose. It would thus form a complete over-all Government monopoly in buying and selling metals. It would be even a more absolute monopoly than the Federal Surplus Marketing Administration and the Commodities Credit Corporation which buy all surplus food supplies for the Government for transport to our "allies," and for distribution among the underprivileged, and for storage against the day when we bargain at the peacetable.

Materials Stocks May Be Commandeered

These allocations, or rationing, will tighten things up harshly, but the system is expected definitely to give non-defense producers some materials. If they carry out the plan as it has been discussed, the corporations and firms that have hoarded metals, raw or semi-finished, will have to surrender their stocks. Even the Navy, which is said to have hoarded two and three years supplies in some Navy Yards, may have to let some of the metals go into the general stockpile.

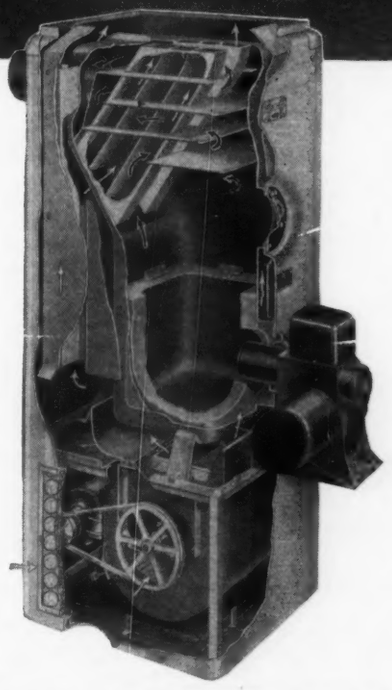
In all likelihood the whole Priorities question will be investigated by Congress. There are experts in Government who say copper should not be so scarce; and the steel people say we have plenty ingots, the bottleneck being in lopsided manufacture of too much

NOW! EVEN GREATER EFFICIENCY IN E-Z-ON!

Prized by contractors for their amazing efficiency, E-Z-ON Damper Regulators are now better than ever—thanks to the new revolutionary style wing-nut that allows more leverage for hand-tightening—is the only wing-nut that can be tightened with a wrench for final set. For better, easier damper assembly jobs, be sure to use the new, improved E-Z-ON. Carried in stock by jobbers from coast to coast.

M. A. GERETT CORPORATION
MILWAUKEE, WISCONSIN

Here's the Answer to your DEFENSE HOUSING Needs . . .



MODEL 14-2

The UTILITY Model

MOR-MAC TUBULAR WINTER AIR CONDITIONER!

The Utility Model is the answer to your problem of maintaining your volume under the present difficult conditions. It is a complete, sturdy, attractively designed, conservatively priced, winter air conditioner. The Utility Model is designed for the small home and meets all defense housing requirements—thus making it available under priority rulings. Note types of firing, capacities and size as indicated below.

Specifications

	Gas	Oil
Input	80,000	0.6
Bonnet Output	64,000	67,000
Casing Width	22"	22"
Casing Length	25"	25"
Casing Height	58¾"	58¾"
Warm Air Outlet	19" x 22"	19" x 22"
Cold Air Return	15" x 20"	15" x 20"

The Mor-Mac Utility Model comes to you completely assembled. It is available in either oil or gas-fired models. The oil-fired model is equipped with a sturdy, efficient, GUN-TYPE burner.

The business future of many heating jobbers, contractors and dealers depends on them keying their business to the defense program. It may be the only way they can be assured of the equipment and materials they must have to stay in business. Let us give you complete information on the Mor-Mac line of tubular winter air conditioners. This exceptional line of winter air conditioning equipment may be the means of securing volume for you and keeping your business running on an even keel during the present emergency.

Write or wire.

MORRISON STEEL PRODUCTS, INC.
601 Amherst Street Buffalo, New York

WOMEN "GO FOR" PAYNE'S STRATOLINER DESIGN

Of course, the engineering *inside* the furnace determines its performance . . . but try to interest the ladies in *that* if the cabinet isn't clean-lined, modern and attractive. ☆ That's why – besides PAYNE's famed emphasis on performance – every PAYNE unit also has plenty of eye-appeal. ☆ Penetrating tests in the PAYNE laboratory have proved every detail of design inside and out – from fire travel to baked enamel finish. ☆ When you recommend and sell PAYNEHEAT, your reputation is protected by the Nation's largest exclusive manufacturer of gas heating equipment.

A few territories are open for representation. Address J. H. Keber, Sales Manager. Please mention this advertisement.

Illustrated: PAYNE Sentry Forced Air Unit. Also Floor Furnace, Gravity Furnace, Zoneair Unit, Duplex Furnace, Modern Console, Spacesaver Unit, Industrial Units and Accessories.

PAYNEHEAT

MORE THAN A QUARTER-CENTURY OF GAS SPECIALIZATION

Payne Furnace & Supply Co., Inc., Beverly Hills, California

of one type of steel which blockades the production of others; and in British refusal of Bessemer steel ingots, forcing production of open hearth ingots which causes continued delay in manufacture at American bar mills.

There are several distinguished specialists in the defense agencies and in the regular Government departments who maintain, if properly planned and administered, there would be plenty metals of practically all kinds for defense *and* non-defense industry. Congress is apt to get very much excited about all this if the pressure continues from those who have lost their jobs and from the manufacturers who have run out of materials and from the towns that have virtually gone on relief as the result of the administration of the Priorities. WPA already has filed notice it will need funds to provide for at least 3,000,000 thrown out of work by the Priorities famine.

Cliques Pulling at Cross Purposes

It is wise always to remember there are several schools of thought in this Defense organization. They invariably disagree violently, and the outsider from industry who gets in between often gets hurt. There is an orthodox crowd which thinks the smaller industrialist can be converted into a defense plant. This is the crowd which insists those who can not qualify for defense production eventually should be put out of business. They agree it is too much to expect the prime contractor to hunt up the smaller industrialist. They say the burden of the hunting is on the smaller business man. He is expected to go to the nearest Contract Distribution Division office and tell his story.

There are to be 200 of these offices scattered around the country. Contract officers of the Army, Navy, and

USED BY COUNTRY'S LEADING GAS UTILITIES

HEREMETAL Flue Liners have proved their superiority and are being used in more installations and conversion jobs because of the economical showing in fuel savings; the ease with which they are installed and the protection given to masonry and chimney.

A checkup of the chimneys in your neighborhood needing repairs will show you the profit you can make by installing HEREMETAL flue liners.

An actual photograph showing the effect of condensation and corrosion upon masonry and chimney, without liner.

THE HEREMETAL COMPANY
MINNEAPOLIS
MINNESOTA

Write today
FOR FULL INFORMATION

other agencies are to be part of these groups. The business man is expected to tell about the equipment in his plant, describe and enumerate his machines, tell about the number of people he employes, his floor space, the volume of his business, his plant capacity, credit rating, his racial affiliations and connections. If he has been a visitor to either Germany or Italy in the past five or ten years it will probably be difficult for him to get defense business, especially if his racial origins stem back to Germany or Italy. These racial precautions are so extreme that they are even shifting officials in the Government here in Washington with German or Italian connections.

Defense Contract Office in Every County

Some months ago I wrote with sincere enthusiasm in these columns about the Defense Contract Service. We told you about the offices with earnest experts scattered around the country who were eager to help you get defense business. *Theoretically* the experts in the new Contract Distribution Division again are straining at the leash to help you. We are told they are looking for more help to bring help to you. They want industrial specialists who can meet you and tell you what you need and what you should do to handle defense business. The Civil Service Commission wishes to get in touch with any one who wants one of these industrial specialists' jobs.

Odlum plans to have at the very least one office in every county of the United States. There are thousands of counties. The plan is to encourage subcontractors to do the work that is available within their own area or region. They hope to discourage subcontracting at a distance. They feel that the average business man does not like to go into a Federal Re-

"Tripl-ife furnace wins on 3 counts"

"The Williamson Heater Company:

"A furnace dealer who wishes to really sell furnaces must first be sold on the product he is selling, from 3 viewpoints; mainly, the company behind the product, for a product without a company is something to beware of. Second, the product itself, its performance, its life, its reputation for creating additional sales. Third, the fact that a 20-Year Guaranteed product must undoubtedly be good or a company could not continue in business for over half a century. My experience has taught me these are the main selling points in selling 'Tripl-ife' furnaces. 'Tripl-ife' meets all these requirements and more."

Signed—XYZ, . . . Missouri

Complete information; name, address of writer of above letter furnished on request. Phone, wire or write The Williamson Heater Company.

FREE: Complete, easily understood short method for figuring air conditioning job. You can complete your figures, price job in one hour flat. Write Dept. No. 2. The Williamson Heater Company, Cincinnati, Ohio.

Complete Line . . . Quick Service

WILLIAMSON
WARM AIR FURNACES

This is our Fifty-first year

NORCO PRODUCTS
..First Line for Home Defense!

Are you doing your part in the big government drive to repair home heating plants? A big national advertising campaign is carrying the message "Repair for Home Protection" to every home owner in the country. Join this effort now. Norco repair parts for heating plants will make it possible for you to make big profits in repair jobs. Start calling on homes at once. Order your repair parts needs from Norco. We can fill your order promptly.

NORTHWESTERN STOVE REPAIR CO.
MANUFACTURERS OF STOVE, FURNACE & BOILER REPAIRS
662 WEST ROOSEVELT ROAD • CHICAGO

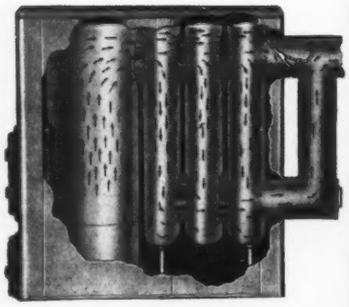
TRADE Leader MARK

KOOLSTACK FURNACES

PUT MORE HEAT TO WORK!

Patented automatic damper diverts hot gases through economizer sections until every possible unit of useful heat is surrendered.

The KOOLSTACK principle is based on a natural law . . . mechanically simple . . . nothing to get out of adjustment.



NOTICE

How the patented automatic damper prevents escape of hot gases.

MINIMUM FLY ASH

The KOOLSTACK principle gives LEADER dealers MORE to talk about . . . MORE to sell!

Available in BOTH cabinet and round cased types.

HAND FIRED . . . STOKERS . . . OIL BURNERS

Other advantages to set the Koolstack dealer apart from any on the market —First: Easily installed, even in close places. Every part will clear a 31" opening. Second: Koolstack furnaces are of all welded construction, permanently gas and smoke tight. Third: There is a Koolstack for every operating load from 50,000 to 200,000 B. T. U.'s.

WRITE TODAY

LEADER IRON WORKS, INC.
DECATUR ILLINOIS
2841 NORTH JASPER ST.

serve Bank to do business with the Contract Distribution Service. They plan therefore to move their offices elsewhere. But for the time being they will maintain the offices in the banks. It is only fair to comment that one of our best friends in the Division remarks that most of the metal trades businessmen going to these offices will be given a polite brush-off because there is not much that can be done in defense for those trades which are available in such abundance as yours.

Community Pool Idea Liked by Washington

Special preparations are being made to help those who pass the quiz to secure financial aid. Mr. Odlum has urged banks everywhere to loan money on defense contracts. Odlum also plans to induce the RFC and the Federal Reserve banks to make the loans. But the big finance drive is to be made by way of "pools."

These pools are extremely popular with the Government crowd. Apparently the new Odlum agency will actively help to bring these pools into existence. There is some relaxation of law against anti-trust violations which apparently has the support of the Department of Justice. The Department of Justice has set up a section for smaller business in its Anti-Trust Division. The section apparently can tell a pool for defense work how it may combine without being "in restraint of trade."

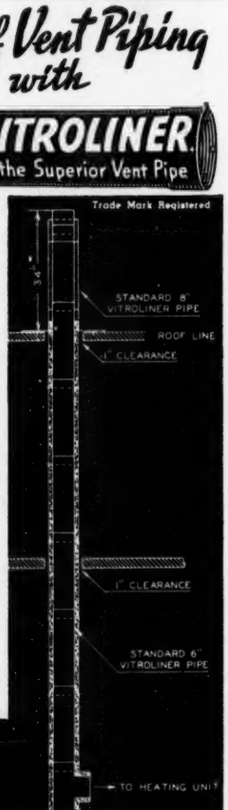
OPM calls these pools "defense associations." Usually they are formed by groups in the same town or region. The York, Pa., pool is usually held up as the shining example. There is another at Manitowoc, Wis. The combination consists of a dozen or a score or more separate units, each too small to handle a contract, but collectively capable of performing the

A Complete System of Vent Piping with VITROLINER -the Superior Vent Pipe

Diagram of Vitroliner outlet vent pipe.

Showing construction of Vitroliner chimney type A. This model is used extensively on low cost housing projects.

Trade Mark Registered



Patents Pending

Vitroliner used with Fyrex insulation eliminates the standard masonry chimney. It consists of lengths of acid resisting vitreous enamel coated steel pipe and fittings, with choice of four roof types of Vitroliner chimneys. This system of outlet and vent piping can be installed inside of partitions or walls. Provides an adequate means for venting gas, oil, or coal appliances.

Write for further details.

CONDENSATION ENGINEERING CORPORATION

2515 ARCHER AVENUE • CHICAGO, ILL. • PHONE CALUMET 4362

job. They pool their machine resources and they bid on work and distribute the work to each member of the pool according to the capacity of the unit. Thus the prime contract goes to the pool and the pool distributes the subcontracts within the pool.

Obviously the idea appeals to the people in the Government organization who fervently look forward to a completely controlled national economy integrated on a cooperative basis. There are eminent men in Government who are eager that all the business and industry of the United States shall be gathered in 80 major combinations. It is the group which has sponsored the several thousand cooperatives owned by the Government and which sell a vast variety of wares to the people at prices so low that the local merchants cannot buy them wholesale from their suppliers at the same price. The Government buys these wares in huge quantities through its own purchasing agency, and uses them in its own structures as well as placing them for sale through its own retail cooperative outlets.

Advisory Committee for Heating

Lionel Heap, formerly of Detroit, is the man in OPM whose name should be tucked away in your files. His office is in Room 2232 Temporary Building D, 2nd Bay, 6th and Independence, Washington, D. C. He is the specialist on all problems of heating, warm air conditioning, sheet metal working, plumbing. He is helpful and friendly and understands trade problems. At the moment he is organizing an Advisory Committee for the trades. He has listed 150 persons representing every possible major element and he will invite them to Washington some time in October.

Sheet metal industries, heating equipment indus-

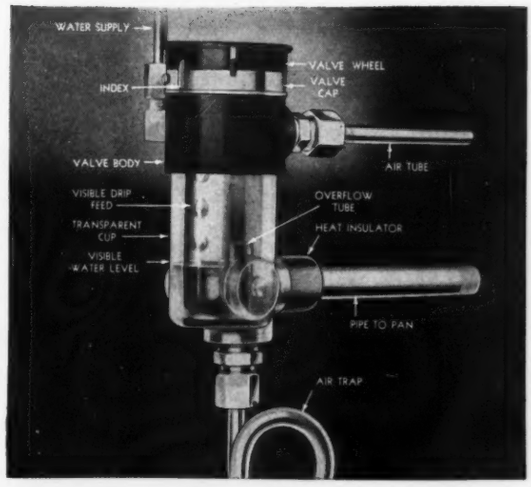
Complete Range of Sizes
Both wheels and complete assemblies are built in sizes to meet any capacity, pressure and speed requirements.

Perfectly Balanced Wheels and Better Bearings Do It!

Use Clarage Fans in your conditioning units and in forced air heating — *and you've licked the problem of noise.* QUIET RUNNING — the result of mechanical superiority — that's why Clarage Fans are so universally preferred.

COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

CLARAGE FAN COMPANY - KALAMAZOO, MICH.
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



MONMOUTH MICRO-FEED CONTROL

Perfected by years of experience, this humidity control valve has many important exclusive advantages:

CORRECT CONTROL PRINCIPLE—By constant feed rate it gives constant increase of humidity over normal air dryness. This results in the automatic maintenance of lower humidity as the temperature of weather, windows and walls becomes lower, eliminating unwanted condensation. This is ideal.

VISIBLE WATER LEVEL—A glance at the transparent plastic cup readily shows how high the water is in the pan.

VISIBLE DRIP FEED—The owner plainly sees how fast water is being supplied and evaporated.

LIME PROOF—The sealed-in drip feed makes lime deposits and clogging impossible.

CORROSION PROOF—High-grade plastic housing and metal alloys cannot corrode.

TROUBLE FREE—So simple in structure and so well engineered that nothing can go wrong that requires free servicing.

PRICE ONLY $6.65—Net to dealers, f.o.b. Cleveland, for complete humidifier, including pipe clamp valve, 17 ft. of tubing, 20" pan with supports and Micro-feed valve. Plate rack and vapor diffusing plates extra according to increased capacity desired.

WRITE TODAY—for complete details. Get started on the humidifier you have long been looking for.

MONMOUTH PRODUCTS CO.
1933 E. 61st St. Cleveland, Ohio

MONMOUTH
The Greatest Name in Humidification

WE RENEW OUR PLEDGE

Two years ago, at the beginning of the present war with its uncertainties and threats to the future of all industry, this Company publicly pledged itself not to increase its selling prices.

On this, the second anniversary, we again publicly renew that pledge.

During the last two years we have not only kept the pledge previously made, but *we have actually reduced our selling prices by more than 6%* because of more efficient operation made possible by the marvelous co-operation and ability of our organization. This was accomplished in the face of rising labor and material costs, both of which have been increased by considerable amounts.

It is our belief that the only hope for the continuance of the present industrial system now threatened from within and without is in its ability to give more and more to the consumer for less and less of his dollar. This is the strength of American individual initiative. This is the hope of our country's future. If American industry can accomplish this universally, we need not fear dictators either at home or abroad.

THE LINCOLN ELECTRIC COMPANY

J. F. Lincoln

President

Cleveland, Ohio
October 2, 1941

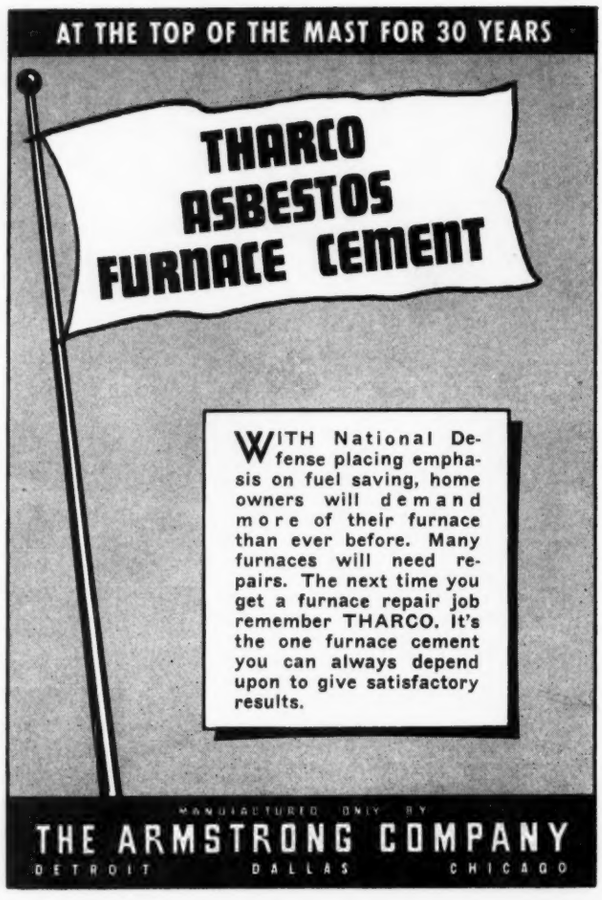
tries those who make stoves, stokers, burners, furnaces, and similar equipment will be invited. The manufacturer, the wholesaler, the jobber, the retailer and the craftsman, all are to be present at the conference. Those who attended the Weiner conferences some time ago are assured this conference will be different. Those who come will be asked to talk, to say their say in full. Mr. Heap seeks complete airing of all the problems and difficulties of the industries. The OPM wants their full counsel on all subjects. It seems probable the get-together may be productive of real results. The group is to choose 15 of its number as a permanent steering committee.

◆

Streamlined Sheet Metal Training

(*Continued from page 75*)

Applying the above to the training of men for operators in sheet metal work, braking-forming operators for instance, the instructor will do well to induct the student into the step-by-step process of production first, emphasizing the importance of each step being done right, and in the case of braking-forming, teaching and demonstrating the operation in all its phases, stressing the necessity of doing the work as it must be done to insure production.


AT THE TOP OF THE MAST FOR 30 YEARS
THARCO ASBESTOS FURNACE CEMENT
WITH National Defense placing emphasis on fuel saving, home owners will demand more of their furnace than ever before. Many furnaces will need repairs. The next time you get a furnace repair job remember THARCO. It's the one furnace cement you can always depend upon to give satisfactory results.
MANUFACTURED ONLY BY
THE ARMSTRONG COMPANY
DETROIT DALLAS CHICAGO

Washington Gas Heating Code

(*Continued from page 62*)

temperature is zero (0) degrees F., exceptions, if any, to be noted on the Installation Certificate.

XI. EXCEPTIONS PERMITTED IN WARM AIR SYSTEMS FOR RESIDENCES HAVING A HEAT LOSS OF 65,000 B.T.U. PER HOUR OR LESS

The following exceptions may be applied to those items in the foregoing Sections which are marked with an asterisk (*):

IV. Duct Construction

B. 3. Double 45° throat or square throat elbows are acceptable.

IV. Dampers

C. 1. The number of dampers in the returns may be limited to one-half the total number of return grilles, but in all cases dampers must be provided in return ducts from dining rooms and living rooms.

V. Registers and Grilles

B. 6. Registers or grilles may be installed in the sides of ducts in basement rooms.

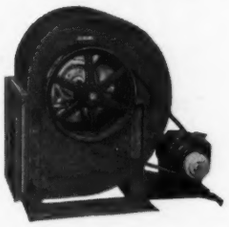
C. 2. A return grille is not required in a heated bedroom, dressing room or upper hall having a heat loss less than 5,000 B.t.u. per hour, except that return grilles must be provided in at least one half (½) of a multiple number of such rooms.

[To be continued]

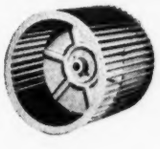
YOUR **BLOWER** REQUIREMENTS

available at

Schwitzer-Cummins Company



● **BLOWERS FOR EVERY PURPOSE**
HY-DUTY Blowers, 9¾" to 25".
Top and Bottom Horizontal, and Top and Bottom Vertical Discharge.
Top and Bottom Motor Mounting.
Dual Units also available.



● **CENTER DISC WHEEL**
Double Inlet, Double Width.
Reinforced Center Disc.
Designed for Modern Air Conditioning and Heating Applications.
Sizes, 4½" to 50".

● **SINGLE INLET WHEELS**
For Oil Burner, Stoker, and Air Conditioning Applications.
Sizes, 4½" to 50".
Variety of Blade Lengths for each diameter.

● **ENGINEERING DATA**
Write for Catalogues showing complete Performance Data.
Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
125 FAN STREET INDIANAPOLIS, U. S. A.

More than 85% efficient ! ! !
Its sale helps you do your share in the "WAR ON WASTE"! ! !

You can help in the Government's "War on Waste," and incidently make yourself some nice profits, by selling the super-efficient FRONT RANK Oil Furnace.

Engineered by one of the country's oldest furnace manufacturers, it is so efficient it costs little more to operate than solid fuel units.

If you are not now handling FRONT RANK, it will pay you to do so. Write or wire for our liberal dealer plan.

A Complete Line of Warm Air Heating Equipment

Cast Iron Furnaces, Steel Furnaces, Stokers, Registers, Winter Air-Conditioned Furnaces, Blowers, Oil Burners.

PROFITS TO THE FRONT WITH FRONT RANK
FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS, MO.

DON'T LET CLOGGED AIR FILTERS BE THE BOTTLE NECK TO AIR CONDITIONING EFFICIENCY

★ Your air conditioning system can deliver its utmost efficiency only if your air filters are permitting a free, unobstructed flow of clean, pure air. Clogged filters not only hamper the free passage of air but they put unnecessary "drag" on your motor and blower . . . impair heating efficiency . . . increase fuel consumption.

Don't let clogged air filters be the *bottleneck* to the efficiency and operating economy of your air conditioning system. Install AIR-MAZE Permanent, Cleanable Air Filters. Their scientific construction prevents any tendency to clog during normal use. Thus, the air passages are always clear . . . more area is available to collect dust.

AIR-MAZE Filter Panels need no replacements. They can be cleaned again and again during their long life. After each simple, inexpensive servicing they are "good as new" and ready for further, trouble-free performance.

AIR-MAZE Permanent, Cleanable Air Filter Panels are approved by the Underwriters Laboratories as fire resistant. They are sturdily built of steel to last as long as the life of the air conditioning system in which they are installed. Write for complete information.

Come to Chicago and see Air-Maze at the Fourth All-Industry Exhibition, January 12 to 15, 1942—Booth No. 810
Air-Maze will also show at the 7th International Heating and Ventilating Exhibition at Philadelphia, January 26 to 30, 1942

AIR-MAZE CORPORATION
5130 Harvard Avenue • Cleveland, Ohio

AIR-MAZE
DEPENDABLE AIR FILTERS FOR EVERY APPLICATION

"Green Light" For Defense Housing

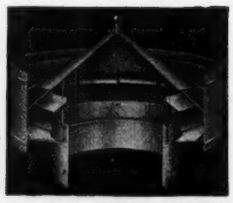
(*Continued from page 37*)

All of this sums up to just one thing—a very active old house heating market for our equipment and services.

The operation of this plan has been previously explained in detail. In brief, in the new house field a builder will prepare plans and specifications of the houses he proposes to erect and will take these plans to his local FHA office. If approved OPM will assign the area priority rating to the furnace, plumbing, electrical conduit and other materials or equipment which are scarce enough to be now under priority control. The furnace dealer (like the electrician and plumber) will take a copy of this priority certificate to his furnace manufacturer or jobbers and obtain his furnaces. The furnace manufacturer will take his copy of the same certificate to the sheet and plate mill and get material for a furnace to replace the one just sold.

An identical procedure will apply to old house work except that the owner of the building will visit his local FHA office and explain what he proposes to do. If his proposed improvements make

BURT
Standard Gravity
VENTILATORS



STEADY PROFIT MAKERS

"Standard Gravity" ventilators are adapted to so many types of buildings, and are so favorably priced, that you are assured a steady continuing demand. Burt makes a size and a type for every purpose, of any kind of material. Burt Engineers are glad to be of assistance in estimating and laying out plans.

Send for Catalog

THE BURT MFG. CO.
Roof Ventilators . Oil Filters . Exhaust Heads
301 MAIN ST., AKRON, OHIO

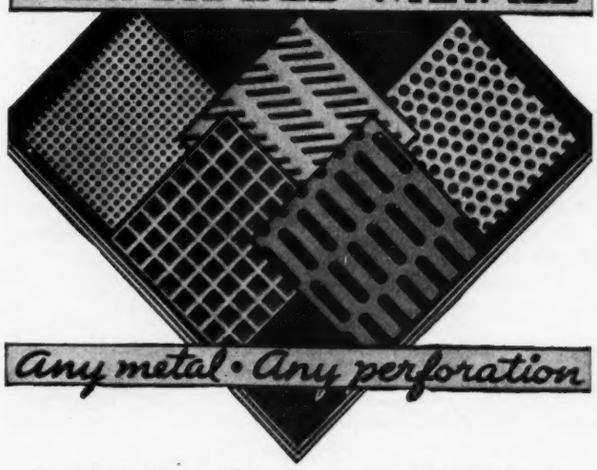
additional living quarters for another family or roomer FHA will again approve the plans and recommend priority rating. FHA and HOLC in addition, are expected to have staffs of experts who can advise with and help the building owner plan his improvements; tell the owner the approximate costs and supervise construction.

If the heating industry and the building industry get behind this program whole-heartedly there should be a tremendous wave of improvement construction running all through the winter and probably all through 1942. It well may be that the only brake on the program will be a scarcity of mechanics. Incidently, in the warm air heating industry there is already a scarcity of mechanics in many, many cities.

FHA's plans for popularizing this repair program was published in complete detail in the August issue. If readers do not have this issue or are not acquainted with the program, by all means visit the local FHA office or your local banks making FHA insured loans and find out just how comprehensive and far reaching this program is.

It's a program made to order for our industry. We can and should reap profits from it. We can if everyone gets behind the program and pushes it along.

PERFORATED METALS



H. & K. Perforated Metals are accurately made and embrace a great variety of perforations for use in screening, grading, ventilating and straining of different substances.

Tell us your requirements and we will send booklet showing actual sizes of perforations.

The Harrington & King PERFORATING CO.

5649 Fillmore Street, Chicago - 114 Liberty Street, New York

Pacific writes dollar signs on the profit side of your ledger!

The De Luxe A-69 Forced-Air Furnace typifies the dramatic sales appeal packed into every unit of PACIFIC'S complete, profit-stimulating line.

Behind it are many years experience in furnace design. All the features that count in making sales are there—smart design that enhances the appearance of any well-furnished basement playroom, PLUS unsurpassed performance. . . . Operates quietly and AUTOMATICALLY to air condition your customer's home in winter and ventilate it with refreshing, filtered air in summer.

PACIFIC A-69 furnaces are shipped completely assembled in two separate sections — one containing a blower and the other the heating unit. They are quickly and easily installed on the job without expense of re-assembling, thereby saving time and installation costs.

There are MANY desirable reasons why you and your customers will prefer PACIFIC products. These are explained in our new catalog. You'll be impressed with the liberal PACIFIC Dealer set-up and its unusual opportunities for profit. Write for details TODAY!

ADVANCED DESIGN FEATURES
That Help You Make PROFITABLE SALES

PACIFIC'S exclusive Round Heating Element ...an extra step forward in increasing initial velocity, insuring uniform heat distribution and providing more effective radiation surface. Rigid, durable, leakproof.

PACIFIC Multi-Tubular Burner with heavy cast-iron fire-box liner. Fixed air and gas mixtures provide correct flame and uniform burner operation at all times.

Pacific GAS RADIATOR CO.
HUNTINGTON PARK, CALIFORNIA

Three and a half DECADES OF DEFENSE

Three and a half decades . . . devoted to serving American industry . . . to defending American equipment from bearing troubles. This Randall spirit of cooperation has brought manufacturers in ever increasing numbers to standardize on Randall Bearings.

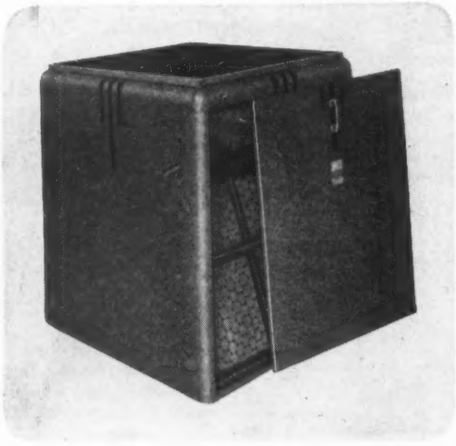
Randall

One-Piece Steel Housing Pillow Block

Self-aligning and self-lubricating Randall Pillow Blocks give long, quiet, trouble-free service with only minimum attention. Our catalog showing the complete Randall line will prove invaluable in selecting efficient bearings for your equipment. Write for it today.

Randall

RANDALL GRAPHITE PRODUCTS CORP.
Dept. 1011 609 W. Lake St. Chicago, Ill.



Viking Blower-Filter Unit
Converts any Gravity Furnace Into a Modern Forced Air System

Every owner of a gravity furnace would like a modern forced air unit, but not all need or will buy a new furnace. You can provide them with all the advantages of evenly distributed, filtered, circulating warm air by installing a Viking Blower-Filter Package on their present furnace.

Write for complete specifications, prices and sales helps.

VIKING AIR CONDITIONING CORP.
5600 Walworth Ave. Cleveland, Ohio

Defense Developments

(*Continued from page* 43)

such types of steel during the first quarter of 1941.

Warehouse Deliveries Limited

Deliveries of steel from warehouses are limited by the terms of the order. Except for small sales, in amounts specified in the order, warehouses may not make deliveries of alloy steel for any but defense orders. Orders for carbon steel for nondefense purposes may be filled after provision has been made to care for present and anticipated defense orders.

Exemptions from these requirements permit monthly deliveries of alloy steel on small nondefense orders up to 10 per cent of the average monthly deliveries of such material during the first quarter of 1941.

Small orders, as defined in the order, are for materials in the following amounts: Alloy tool steel, 50 pounds per item; stainless steel, 50 pounds per item; other alloy steel, 300 pounds per order.

◆

OPM Ordnance "Shopping List"

A "SHOPPING LIST" of items that the Army Ordnance Department wants to buy has been sent to OPM field offices in 39 cities for information of prospective contractors and subcontractors, it was announced last week.

This information as to material wanted under the Ordnance Department's new $2,888,980,486 program will be made available at the field offices to responsible manufacturers, in line with President Roosevelt's policy of helping smaller business units of the country obtain a fair share of defense orders. The list includes shells, bombs, gun carriages, guns, gun mounts, fire control equipment, pistols, rifles, and power trains—consisting of transmissions, controlled differentials and final drive units—for tanks.

Detailed information of value to prospective producers is included concerning each item.

Opm field offices, where the "shopping list" of ordnance items will be available to responsible plant owners, are located in Federal Reserve banks and branch banks in the following cities:

Atlanta, Baltimore, Birmingham, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, El Paso, Tex.; Helena, Mont.; Houston, Tex.; Kansas City, Mo.; Little Rock, Los Angeles; Louisville, Ky.; Memphis, Tenn.; Nashville, Tenn.; New Orleans, New York City, Oklahoma City, Omaha, Philadelphia, Pittsburgh; Portland, Ore.; Richmond, Va.; Salt Lake City, San Antonio, San Francisco, and St. Louis.

Other OPM field offices, where the list also will be available, are as follows:

Buffalo—Traders Bank Building, Room 212, Main and Swan Streets; Charlotte, N. C.—New Liberty Life Building; Cincinnati — Union Trust Building, Room 804; Des Moines, Iowa—505 Crocker Building; Jacksonville, Fla.—504 Hildebrandt Building; Milwaukee—1124 First Wisconsin National Bank Building; Minneapolis—240 Grand Tower Building; Newark—176 Sussex Avenue; Seattle—National Bank of Commerce Building.

"I TOLD You It'd Pay
to Buy a PREMIER!
They're Pre-fitted at the Factory"

Every PREMIER Furnace is assembled at the factory and all parts carefully fitted. Then parts are numbered, packed together, and the entire furnace shipped as a unit.

When you get a PREMIER out on the job, it's bound to go together quickly and easily, keeping labor costs to a minimum — and safeguarding your profit.

Write

for This Portfolio

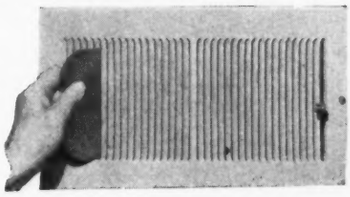
PREMIER FURNACE CO.
Dowagiac, Michigan

PREMIER
- Warm Air Heating
- Air Conditioning
- Automatic Fuel Burning
- Cooling Equipment

The Year Round Line

STANDARD
REGISTERS, GRILLES
AND
PERFORATED METALS

BEND-EZY REGISTERS AND GRILLES



The "BEND-EZY" consists of a group or groups of bendable bars set at an angle of 30° at the factory and which may be set at any desired angle in the field.

Design No. 31 V-HMS (Sidewall Multiple Valve Register) face consisting of two groups of vertical bars one-half set to the right and one-half to the left, with horizontal "Thin Man Shutters" adjustable to direct air flow from straight outward or up or down and to complete shut-off.

The shutter is shallow, depth closed ½" at top and bottom, 1¾" at side of handle. Depth opened 1½" at top and bottom, 2" at side of handle.

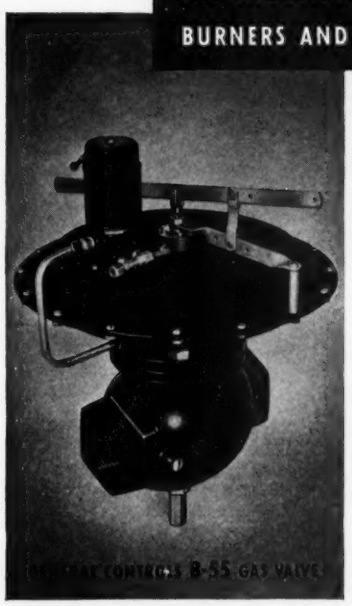
Further information on request. Please write today.

PERFORATED METALS
Stamped Ornamental Grilles for Heating and Ventilating Installations.

WRITE for CATALOG

STANDARD STAMPING & PERFORATING CO.
3137 W. 49th Pl. Chicago, Ill.

THE ONE CONTROL THAT MEETS ALL YOUR REQUIREMENTS FOR INDUSTRIAL & COMMERCIAL BURNERS AND FURNACES . . . . .



- Opening time adjustable, 5 to 60 seconds.
- Widest range in pressures. Handles up to 5 lbs.
- Widest range of sizes. Available from ¾" to 6" I.P.S. for manufactured or natural gas.
- Ample power is available for louvre control. Damper arm easily rotated to any desired position.
- Low current consumption. In sizes up to 1½" I.P.S., uses but 8 watts.
- A.G.A. and Factory Mutual approved.
- Ask For New Bulletin. Write for your copy of the new 12-page gas control bulletin just off the press. Use it as your buyer's guide.

GENERAL CONTROLS
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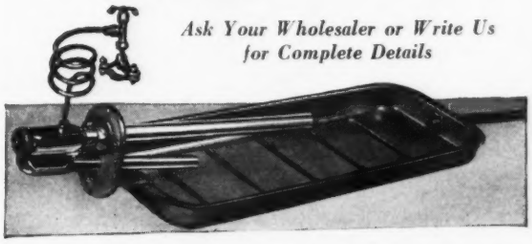
Choose your humidifier for *MEASURED* moisture and you'll choose

THERMO-DRIP

- It automatically accelerates, throttles or shuts off the water feed as the temperature in the furnace rises or drops . . . never a fixed amount of water in the pan regardless of whether the furnace is hot or cold . . . never the uncertainty about the amount of vaporization. For, the pan will vaporize only the parade of water drops fed in direct proportion to temperature. That's *measured* moisture! That's performance that satisfies!

Ask Your Wholesaler or Write Us for Complete Details



AUTOMATIC HUMIDIFIER CO.
18th and Main Street CEDAR FALLS, IOWA

Neubecker Pattern For a Two-Prong Y

(*Continued from page 66*)

manner all of the true lengths for both solid and dotted lines for branches *A* and *B*, are found.

The reader can readily verify each true length of solid and dotted lines by comparing similar number in branches *A* and *B* with those in the diagrams of true lengths.

Having found the true lengths, the one-half pattern shape is laid out as shown in the lower left hand corner. Take the distance of the bridge *5-6* joining *A* to *B*, and set it off as shown by *5-6* in the pattern shape. Now with a radius equal to *5-15* in the diagram of solid true lengths for *A* and using *5* in the pattern as center, strike a short arc near *15* and intersect it by an arc struck from *6* as center with a radius equal to *6-15* in the diagram of solid true length for *B*. With *15-16* in the semi-circle *C* as radius and *15* in pattern as center strike a short arc near *16* and intersect it by an arc struck from *5* as center with a radius equal to *5-16* in the diagram of dotted true lengths for *A*. With *5-4* in the semi-circle *a* as radius and *5* in the pattern as center strike a short arc near *4* and intersect it by an arc struck from *16* as center with a radius equal to *16-4* in the diagram of solid true length for *A*.

Proceed in this manner using alternately first the proper numbered division in the semi-circle *C* then the proper numbered true length of dotted line in diagram of dotted lines for *A;* the proper numbered divisions in the semi-circle *a* then the proper numbered true length of solid line in diagram of solid lines for *A*, until the last line *1-19* in pattern is drawn, which is obtained from *1-19* in branch *A*, (its true length).

In similar manner obtain the pattern for branch *B* shown from *6* to *10* to *11* to *15* in the pattern shape, the line *10-11* being obtained from *10-11* in branch *B*, (its true length). Care must be taken that the dotted lines in the pattern connect to numbers, similar to those in branches *A* and *B*. A line traced through intersections so obtained as shown in the pattern by *1-5-6-10-11* and *19* will be the one-half net pattern shape.

Allow edges for grooving, riveting or seaming. When forming up the half pattern make right angular bends along *5-15* and *6-15*, then round out *11-19* of the pattern on the mandrel stake.

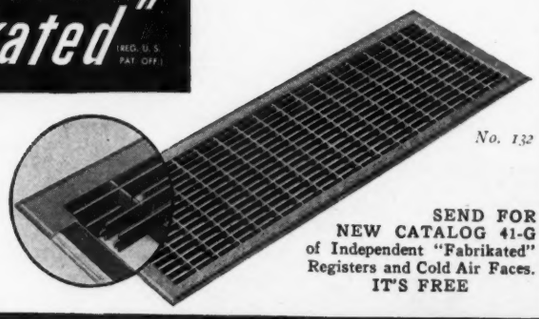
Computing Square or Rectangular Duct

If the main duct of the two branch fitting is to be square and have an area equal to the combined area of the two branches, which in this

INDEPENDENT "Fabrikated" (REG. U. S. PAT. OFF.)

COLD AIR FACES

• Great strength, rigidity and large open area are attainable with Independent "Fabrikated" construction. Supplied in standard and close mesh. Fine appearing, they lend a modern effect to any installation.



No. 132

SEND FOR NEW CATALOG 41-G of Independent "Fabrikated" Registers and Cold Air Faces. IT'S FREE

THE INDEPENDENT REGISTER CO.
3747 EAST 93RD STREET CLEVELAND, OHIO

THE MEYER FURNACE COMPANY · WEIR · MEYER · PEORIA, ILLINOIS

Yesterday—We Helped **Build** America. **Today**—We're Helping **Defend** America. **Tomorrow** — We'll Be **Building** Again!

THE MEYER FURNACE CO., PEORIA, ILL.

Bremil

Two Sizes

PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line. Prompt shipment can be made from stock.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel.

BREMIL MFG. CO., ERIE, PA.

FLUE COLLARS

Commercial Pressed Steel Flue Collars are used to form the connection between the furnace belt and the radiator. They are of sufficient diameter to permit of lining with a cast iron screen so as to keep the excessive temperature of the flue gases from coming in direct contact with the other connection.

These collars are drawn in one piece and their ends can be welded into the shell of the furnace belt and radiated giving a gas pipe joint.

Horizontal flanges are uniform smooth. Holes are all punched at one time; and, with the insertion of a gasket, a gas pipe joint is easy to make. The length of these collars is sufficient to give proper air space between the radiator and the dome and yet allow plenty of room for bolting together.

THE COMMERCIAL SHEARING & STAMPING CO.
YOUNGSTOWN, OHIO

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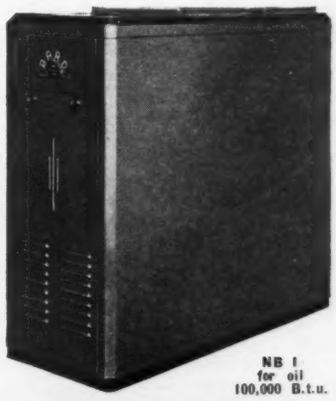
the BARD LINE of
WINTER AIR CONDITIONING UNITS
IS COMPLETE
FOR OIL OR GAS!

The Right Unit at the Right Price for homes or commercial jobs.

From 80,000 to 400,000 B.t.u.

You can take "price" business at a profit, with Bard units . . . and be sure of satisfied customers. Bard owners are Bard dealer's best salesmen.

Write for dealer proposition.



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for oil
100,000 B.t.u.

BARD MANUFACTURING CO.
BRYAN — OHIO

SAL-MO Asbestos DUCTBOARD

For making Cold Air Return Ducts

SAVES TIME SAVES METAL

A new asbestos product developed to do the same job usually done with metal.

SAL-MO Asbestos DUCTBOARD is fireproof, moisture-proof, light in weight and durable.

Made in sheets 33" x 48"—1/8" in thickness—just the right width to cover 3 joists spaced at 16" centers, making 2 cold air return ducts.

Easily applied with hammer and nails or stapler. Samples on request.

SEE YOUR NEAREST JOBBER

SALL MOUNTAIN COMPANY
176 West Adams Street Chicago, Illinois

BUY WHITNEY-JENSEN
METAL-WORKING MACHINERY and HAND TOOLS
for LONG LIFE and ACCURACY

FOUR SIZES . . .

TOGGLE-ACTION FOOT PRESSES

Toggle MULTIPLIES foot power, giving fast, EASY action on punching and forming operations. Capacity 2" hole in 16 ga. iron, 100 holes per minute or better. Available for prompt delivery.

Write for Catalog 14

No. 17 BENCH PUNCH

A favorite general-use tool, now featuring five recent improvements. Capacity 1/4" hole in 1/4" iron. Work table 6" x8" available.

POPULAR No. 5 Jr. PUNCH

In a handy metal kit, with holder for extra punches and dies. Thousands in daily use the world over. Capacity 1/4" hole in 16 ga. iron, punches in center of 4" circle. Double-duty depth gauge.

OVER 80 USEFUL SHEET METAL TOOLS

WHITNEY METAL TOOL COMPANY
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Premier FURNACE CLEANER

STOPS FUEL WASTE!

Increases efficiency . . . saves fuel . . . aids defense! Write today for literature and complete information.

COMPLETELY EQUIPPED

½ H.P. $74.50 • 1 H.P. $89.50

Complete chimney cleaning equipment only . . $10.00

Electric Vacuum Cleaner Co.

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QUIET-AIRE

Blowers

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No Increase in Prices

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Prompt Delivery

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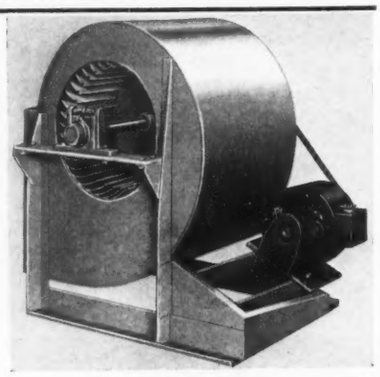
Patented motor mounting; self-aligning, self-lubricating bearings guaranteed 5 years. Super capacity and exclusive features build sales. Write



MAPLE CITY STAMPING CO.

PEORIA, ILLINOIS

The "QUALITY" *Nail!*

DENISTON

TRIPLE LOCK LEAD SEAL

ROOFING NAILS

Look at it! . . . You can SEE the superiority of this nail! The lead, under the head and down the shank, plugs the hole around the nail with lead to form a weatherproof seal . . . the "bump" triple-locks nail, lead and sheet solidly together . . . when the nail is driven through sheet metal roofing the drive screw shank gives greater holding power than even the Deniston ring shank nail. No loosened roofing, no leakage. Insure QUALITY roofing jobs with Deniston QUALITY Nails. Full details and prices, with samples and demonstrator blocks, FREE.

The DENISTON *Co.*

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ALDRICH

Famous Feature

OIL BURNERS AVAILABLE NOW—NO DELAY

Aldrich anticipated—and built ahead. Right now, you can have the famous, exclusive, sales-building Aldrich features without delay. There's an Aldrich-built burner for every installation. Order now.

ALDRICH COMPANY • WYOMING, ILLINOIS

★VOLUMETER

Controls the air volume without altering static pressure or velocity.

★MAGIC DIAL

Regulates the adjustment of VOLUMETER while the burner is operating.

★SERVICE-FREE

Aldrich engineering genius practically eliminates service calls.

case is 50.08 sq. inches, then simply extract the square root as follows:

$$\sqrt{50.08} = 7.08.$$

The square duct would be 7.08 × 7.08 inches.

If the main duct is to be rectangular with a given side say, 6 inches then $\frac{50.08}{6} = 8.34$ and 6 × 8.34 inches would be the size of the main duct. The decimal .08 in the square duct would equal 5/64 inch or a trifle over 1/16 inch.

The decimal .34 in the rectangular duct would be equal to 11/32 inch or a trifle over 5/16 inch. Whether the main duct is to be square or rectangle simply add *one-half* of the *square* or rectangular section on the line *11-19* in *A* and *B* and proceed as before.

Diagram *X* shows how a semi-rectangular section is placed on the base line and how lines are connected from branch prongs to base line.

◆

Defense Housing Critical Areas

(*Continued from page* 40)

San Angelo
San Antonio
Texarkana
Vernon
Victoria
Wichita Falls

Utah

Ogden
Salt Lake City

Vermont

Springfield-Windsor

Virgina

Dahlgren
Newport News
Norfolk-Portsmouth
Petersburg-Hopewell
Pulaski- Dublin-Radford

Washington

Bremerton
Everett
Keyport
Longview-Kelso
Seattle
Spokane
Tacoma

West Virginia

Charlestown
Morgantown

Wisconsin

Beloit
Green Bay
Madison
Manitowoc
Milwaukee
Oshkosh
Racine-Kenosha

Alaska

Fairbanks
Anchorage
Ketchikan
Kodiak
Sitka

Hawaii

Honolulu

Virgin Islands

Charlotte-Amolie

Puerto Rico

Aquadilla
San Juan

◆

Anthracite Price Rise Blocked

ACTION essential to protect the interest of householders depending upon hard coal for heating was taken by OPA through issuance of an emergency price schedule blocking the 15-cent per ton increase which producers of Pennsylvania anthracite had proposed to put into effect September 15.

Maximum prices established in the schedule (f. o. b. mine per net ton of 2,000 pounds) are $6.60 for the principal domestic sizes—broken, egg, stove, and chestnut; $5.10 for pea coal, $3.75 for buckwheat No. 1, $2.90 for rice, and $2.15 for barley. The latter three sizes are used for commercial and industrial purposes.

QUALITY EQUIPMENT-- FROM HESS-- COSTS LESS

DEALERS---Write for our New 1941 Portfolio

By selling — repairing, modernizing or replacements, needed by owners of a majority of heating plants now in use.

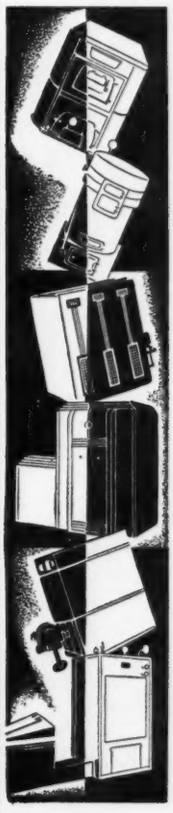
HESS BLOWER FILTER UNITS
HESS WELDED STEEL FURNACES
HESS AUTOMATIC OIL BURNERS
HESS AUTOMATIC COAL STOKERS

ARE GREATEST VALUES
AT LOWEST PRICES

The Hess line is complete for every dealer requirement, distinctively different and more saleable. Financing plan and territory plan—helps Hess dealers.

WRITE FOR DEALER PORTFOLIO
HESS WARMING & VENTILATING CO.
1211-27 S. WESTERN AVE. Founded 1873
CHICAGO, ILLINOIS

IN Every INSTALLATION



WHEREVER FURNACE CEMENT IS USED

LACLEDE FURNACE CEMENT

Dries Faster
Sets Stronger
Lasts Longer

You may fire the furnace immediately and yet be sure of an air and gas tight joint that stays tight and withstands severe temperatures.

Free Sample on Request

LACLEDE-CHRISTY
CLAY PRODUCTS COMPANY
ST. LOUIS • MISSOURI
411 N. SEVENTH ST.

Stoker FIRE PILOT Control

A Control for Every Need

The Sampsel Fire Pilot Control line includes five types—in sizes to operate stokers in the smallest domestic up to the largest commercial installation. Each unit is easily installed; requires minimum servicing. Incorporates built in entrance switch—1, 2 or 4 cycles per hour, 1 to 7 minutes each. Underwriters' approved.

DAMPER MOTOR CONTROL

For hand-fired heating plants. Install either with Sampsel Day-Night Clock or Standard Thermostat. Operates on temperature change of ¾°.

STANDARD THERMOSTAT

Furnished with or without wall base. Full temperature range from 50° to 90°. Attractive bakelite base allows quick, easy installation. Attractive shock-proof cream plastic cover.

ATTIC FAN CONTROL

Operates attic fan automatically at any desired time for any period . . . or with thermostat, on rise and fall of temperature.

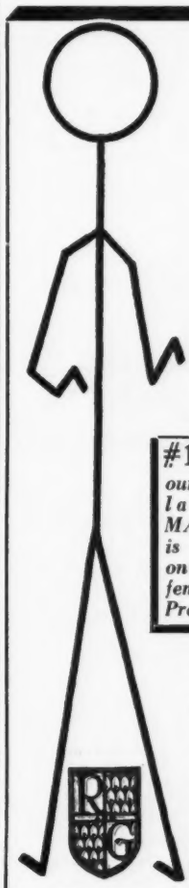
WARM AIR FURNACE CONTROL

A three-in-one control adaptable to 2 or 3 wire line or low voltage limit control or 2-wire line voltage fan control operation.

WRITE FOR LITERATURE AND PRICES

SAMPSEL TIME CONTROL, INC. Spring Valley, Illinois

HAVE YOU MET THIN MAN TRADE MARK



THE NEW REGISTER

Designed especially to meet limited wall thickness requirements. Our low list price assures economical cost; our new Swivel Socket Lug permits further savings through omissions of frames.

#1108, one of our most popular "THIN MAN" Registers is being used on many Defense Housing Projects.

PERFORMANCE: from closed position air stream may be graduated over 135° radius, directed down, straight, or up.

All moving parts rotate on BRASS BEARINGS; rust and clogging minimized.

Write today for descriptive circular.

REGISTER & GRILLE MANUFACTURING CO., Inc.
70 BERRY ST., BROOKLYN, N. Y.

HEATING PLANT

maintenance and repair is essential. Be sure of work with a

GRAND RAPIDS FURNACE CLEANER

Free Trial
Convenient Terms

Write for details

DOYLE VACUUM CLEANER CO.
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LEADING
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"NEW FIELDS for Profits in NEW METALS"

- CHROME FINISHED COPPER
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Write us regarding your problems of designing and trim on interior and exterior finishes.

APOLLO METAL WORKS
6653 S. Oak Park Chicago, Ill.

Air Conditioning

—What happens between two rooms, one having a six minute air change, and the adjoining room a twelve minute air change?

—Can you install a thermostat control system properly?

The answers to these and hundreds of other mechanical questions about air conditioning are appearing in the monthly *Air Conditioning Section* of AMERICAN ARTISAN.

If you do not now get the ARTISAN, send us $2 and we will enter your subscription for a full year—12 consecutive issues. Your subscription will yield a rich harvest of money making ideas and solutions to many mechanical problems connected with warm air heating and sheet metal contracting.

AMERICAN ARTISAN
6 North Michigan Ave. Chicago, Ill.

Equitable Recognition For Our Industry

(*Continued from page* 41)

tional Sheet Metal Workers Alliance, Room 500, American Federation of Labor Building, Washington, D. C. This office will organize the ammunition to obtain the maximum good.

The Wisconsin state association has already started the ball rolling. Other state, local groups can add their data; individual contractors and unorganized groups can do the same.

This is not a high-pressure, lobbyist movement. It is a straight forward presentation of the facts as our industry finds them and we believe our troubles are worth consideration.

Following is a copy of the Brief taken to Washington:

Factual Data in Support of Priorites Request

A VITAL need of the Defense Program is being met by the sheet metal industry of the Chicago area, which is throwing the weight of its experience and facilities into promotion of the Program wherever its services are required. Some of its contractors have contracts with the Defense Commission directly, others act as subcontractors on Defense work, and the great majority are employed in providing housing, comfort, safety appliances, health insurance, industrial hygiene, and other numerous requirements for general sanitation in hospitals, laboratories, factories, theaters, dining rooms, churches, schools, and other classes of occupancy. All these installations come under the regulation of the local Board of Health, which body is empowered by law to enforce codes to maintain certain standards of health and safety for the public.

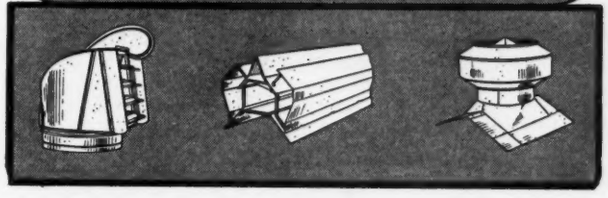
In order to promote harmony and expedite the Collective Bargaining Act, the Chicago area is represented by duly elected members of three branches of the sheet metal industry; namely, the Air Conditioning Contractors' Alliance whose membership works in the home heating field installing warm air heating and winter air conditioning units in housing projects and in small homes for the working public. Installation standards conforming with the gravity and mechanical codes of the National Warm Air Heating and Air Conditioning Association have been adopted by and are religiously followed by members of this group, thus assuring health and comfort to the occupants of these small homes. Heating units used are generally of the same type and design as used in government housing projects and a large share of the homes heated by this group are occupied by workers in defense plants; the Sheet Metal Contractors Association of Cook County manufacture and erect sheet metal work of a general nature for all industrial, commercial, residential and public buildings. These buildings play an important part in the defense program. Sheet metal contractors manufacture in their shops and erect on the buildings such items as skylights, ventilators, flashings, gutters, downspouts, conductor heads, roof decking, metal louvers, spandrels, metal windows, ducts, hoppers and also erect slate and tile roofing using in connection with this work, nails and flashing. Considerable material is being constantly used in the maintenance and repair of existing buildings. Failure to obtain black sheets, galvanized sheets, copper sheets, nails, rivets, solder, etc. will cause the closing of sheet metal shops and the throwing out of work many workmen. Without sheet metal work the contractors and builders will be unable to complete buildings necessary for defense, housing etc.; and the Ventilating and Air Conditioning

Swartwout Ventilators

find increasing use in industry and in Government building—and Swartwout continues to supply all customers with its high grade products

THE SWARTWOUT COMPANY, CLEVELAND, OHIO

Swartwout



"PRECISION MANUFACTURED"

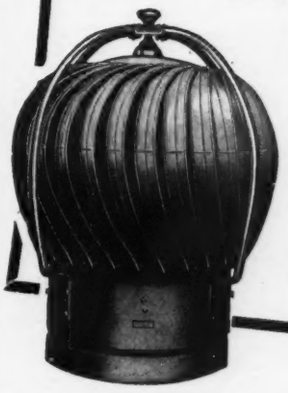
Built to exacting engineering design, by exacting production methods, Allen Ventilators not only operate with outstanding efficiency, but have such long life that they frequently outlast the buildings on which they are installed.

There's an ALLEN for every ventilation need that you will be asked to fill, and you assure satisfaction of your customers by always installing Allens.

Ask for our detailed data for your files.

The ALLEN Corporation

9752 Erwin Avenue
Detroit, Michigan

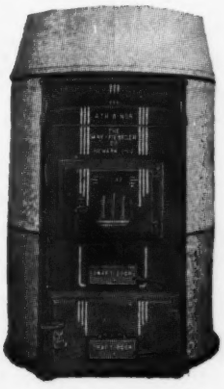


ALLEN TURBINE VENTILATORS

50 YEARS OF LEADERSHIP

The Time-Tested

ATH-A-NOR



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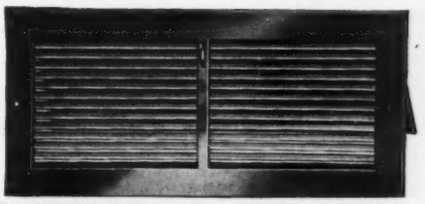

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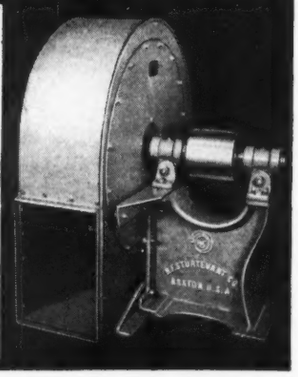

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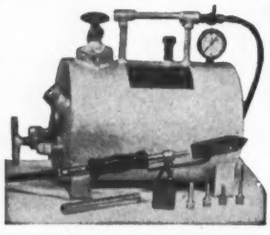

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Contractors' Association, whose members provide ventilation, air cleaning, humidification, heating, and cooling in all types of buildings as well as those where Defense work is to be done, thereby enhancing the working conditions, comfort, and safety, thus insuring the health, of the Defense worker; and thereby expediting his work.

These three groups of employers, all of whom employ Union labor affiliated with the American Federation of Labor and Local No. 73 of the International Sheet Metal Workers' Alliance, have subscribed to the maintenance of a Joint Arbitration Board, which has jurisdiction over the training of apprentices to perpetuate the industry, and over promotion of good relations between all concerned in the Chicago area.

It is the desire of this Joint Arbitration Board of the Chicago area to secure recognition of the close cooperation being extended to the Defense Program in this present emergency, and of the vital need of our industry to secure a priority rating which will enable us to continue to function in the service of our country and community on all classes of work which indirectly benefits the Defense Program.

The established functions of the Ventilating and Air Conditioning Contractors may be classified in seven groups, three of ventilation and four of air conditioning, to wit:—

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C—In spaces not covered by A or B, above.

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A—In environments where manufacturing processes require fixed atmospheric conditions.

B—In food storage spaces.

C—For human comfort in amusement and entertainment establishments.

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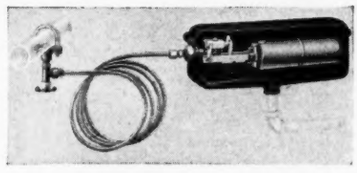

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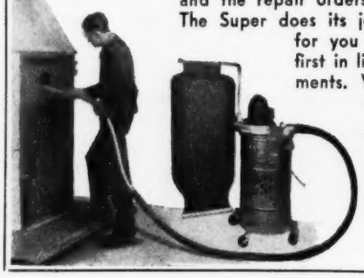

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D—For occupational efficiency where cooling or dehumidifying are necessary because of the nature of the normal atmospheric contamination by the product or process.

WE SUBSCRIBE TO THE RESTRICTION OF SUCH VENTILATION AS INCLUDED UNDER 1-C, ABOVE, AND SUCH AIR CONDITIONING AS INCLUDED UNDER 2-C, ABOVE, BUT SUBMIT THE LEGAL REQUIREMENTS of 1-A AND 1-B AND THE ECONOMIC AND ALL-OUT DEFENSE NATURE OF 2A, 2B AND 2D.

◆

Sisal Collector

(*Continued from page 78*)

through the exhauster. The pipe from picker machine to fan and from fan to collector is 16-inch diameter fabricated of 20-gauge galvanized iron, riveted and soldered to be air tight. A hood picks up sisal at the machine and the conveying line has a gradual upward slope all along the line. A short taper section connects to the fan inlet through a draw band. This duct from machine to fan has a 14 by 20-inch "chunk" trap with a hinged bottom door clean-out counter balanced by adjustable weights so that the trap is self cleaning.

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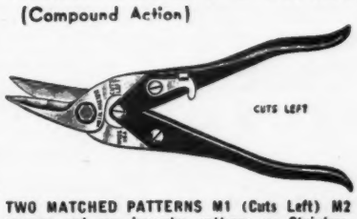

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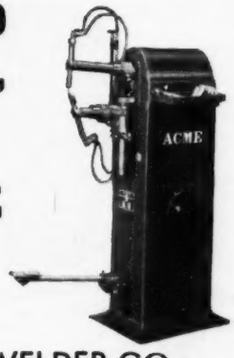

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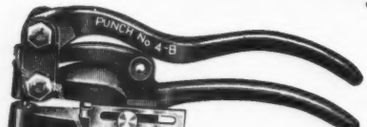

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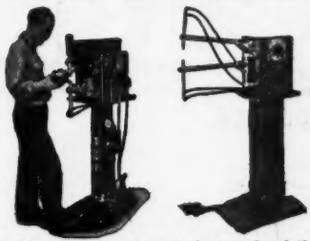

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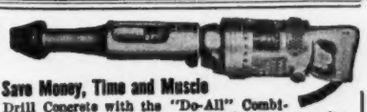

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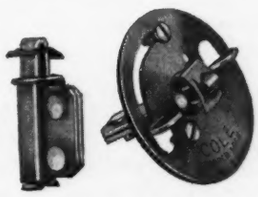

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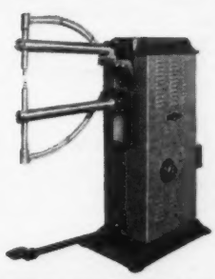

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ONCE more . . . this time for the tenth successive year . . . AMERICAN ARTISAN presents to the trade the COMPLETE ORIGINAL, AUTHORITATIVE Directory of Residential Air Conditioning, Warm Air Heating and Sheet Metal Equipment . . . as part of the January 1942 Issue.

This Directory for years has been accepted as the real source of accurate, concise information on "who makes it" and where they are located. The January 1942 Number is now in the process of preparation and will contain this year, as it does every other year, the Show Section of the International Heating and Ventilating Exposition at Philadelphia complete with all listings and directions of what is to be displayed at the Show and where to find it. The Directory is being completely revised to include all the new products and new sources of supply which have appeared since the last issue. Every manufacturer's line is being checked and re-checked to make sure that he is properly listed under every product he makes, with all his trade names and his correct address.

No regular editorial space will be sacrificed for the sake of the Directory Section in this January Issue. Our editors are as usual selecting a group of outstanding and permanently valuable articles on residential air conditioning, warm air heating and sheet metal contracting subjects that will make this Directory number as much a reference book from an article standpoint as it will from that of product specification and purchase.

Further information on request . . . just drop us a line.

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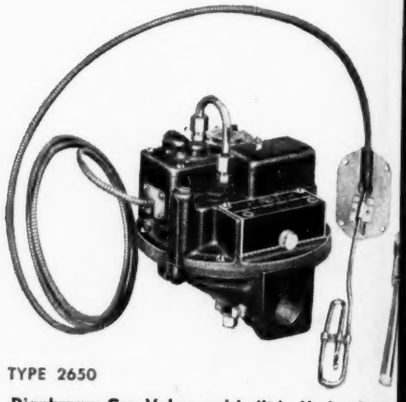

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